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ABSTRACT

Proceedings of the 1980 annual forum of the Association for Institutional Research (AIR) on the topics of meeting the challenges of the eighties by redirecting resources for renewal are presented. Contents include the following addresses: "Planning: An Adaptive Process," by Barbara S. Uehling: "Catastrophe Models in Administration," by E. C. Zeeman: "Applications of Catastrophe Theory to Institutional Research," by F. Craig Johnson: "Meeting the Challenges of the Eighties," by Elias Blake, Jr.: and "Higher Education and the Environment of the Eighties," a panel discussion and reaction with Georgia state officials and AIR respondents. In the first address on planning, it is suggested that among other problems, institutions have failed to give the appropriate information to decision-makers and that insufficient attention has been directed to the political considerations in an institution. Catastrophe theory, a method of modeling based on recent theorems in mathematics, is examined in terms of 10 applications. In illustrating the application of catastrophe theory language to institutional research, cost data and teacher performance are addressed. Additionally, it is suggested that challenges of the eighties include bringing Hispanics, blacks, and other low-income groups into the mainstream from which they have been excluded. Contents also include abstracts of contributed papers, seminars, panels, workshops, and meetings: and minutes of the annual business meeting. (SW)

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THE ASSOCIATION FOR INSTITUTIONAL RESEARCH
ANNUAL FORUM PROCEEDINGS No. 3

Meeting the Challenges of the Eighties: Redirection of Resources for Renewal

edited by
Paul J. Staskey

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Twentieth Annual Forum
April 27–May 1, 1980
Peachtree Plaza Hotel
Atlanta, Georgia

Preface

In preparing the proceedings of the Twentieth Annual Forum of our association, the closing words of Barbara Uehling's keynote address seem timely: "Was there ever a more appropriate time to remember with Heraclitus, 'Nothing endures but change'." It appears that the time has come to once again rethink the format of this publication; further improvements are being considered in the constant effort to provide the membership with useful accounts of the annual meetings.

This will be my last year to work with the *Forum Proceedings*. The four years have been most enjoyable. My overall goal during my service in this position has been to place this publication in the hands of the AIR membership as soon as possible after the Forum. A special thanks to Jean Chulak and the local arrangements committees for their assistance.

Paul J. Staskey
Northern Arizona University
Fall 1980

Annual Forums on Institutional Research

Chicago—1961	(First National Institutional Research Forum)
Chicago—1962	(Second National Institutional Research Forum)
Detroit—1963	*The Role of Institutional Research in Planning*
Minneapolis—1964	*A Conceptual Framework for Institutional Research*
Stony Brook—1965	*Design and Methodology in Institutional Research*
Boston—1966	*Research on Academic Input*
Athens, Georgia—1967	*The Instructional Process and Institutional Research*
San Francisco—1968	*Institutional Research and Academic Outcomes*
Chicago—1969	*The Challenge and Response of Institutional Research*
New Orleans—1970	*Institutional Research and Communications in Higher Education*
Denver—1971	*Institutional Research and Institutional Policy Formulation*
Miami Beach—1972	*Reformation and Reallocation in Higher Education*
Vancouver—1973	*Tomorrow's Imperatives Today*
Washington, D.C.—1974	*Public Policy: Issues and Analyses*
St. Louis—1975	*Information for Decisions in Postsecondary Education*
Los Angeles—1976	*Conflicting Pressures in Postsecondary Education*
Montreal—1977	*Research and Planning for Higher Education*
Houston—1978	*Balancing Needs and Resources*
San Diego—1979	*Issues for the Eighties*
Atlanta—1980	*Meeting the Challenges of the Eighties: Redirection of Resources for Renewal*

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Invited General Session Presentations

PLANNING: AN ADAPTIVE PROCESS (keynote address)

Barbara S. Uehling
Chancellor, University of Missouri-Columbia

(Note: The following is an edited transcript of the keynote address delivered at the Monday morning general session.)

Preparation for the future occupies much of our time and attention these days, even though that future is uncertain, perhaps more uncertain than it ever has been before. From time to time I am sure we all paraphrase the words of Robert Burns, "The best-laid plans of mice and men often go awry." As we plan for the future, we are concerned about the extent to which we are going to be able to carry out these plans. The very state of the world, and the state of higher education, suggests that planning must be an adaptive process. Planning as an adaptive process in higher education is my topic for today; however, let us look at adaptiveness in some other areas before we consider higher education.

The biological organism is a very adaptive one. Through centuries, mutations have occurred until an organism has evolved to its present form. It ingests, metabolizes, excretes, mates, procreates; in short, it carries out its life cycle and conforms to the activities which the evolutionary process has willed to it over many, many years. The species has already adapted and is surviving because of that. Yet, even this automatically functioning organism finds itself, at times, in conditions where alteration is demanded; and it can adapt, and does. A not unpleasant example is that of bacteria, which adapt very readily to host organisms. There are many other organisms at which we could look that have, as their very nature, adaptiveness. Lewis Thomas (1974), in *The Lives of a Cell*, pointed out that even a single cell can adapt and give up its own specificity. He very dramatically illustrates the fact that when biological necessity occurs, adaptiveness will follow.

We can look to other forms of existence, also, and find that adaptiveness. Consider social structures. Think of the kind of alteration which occurred after the Industrial Revolution. Or the adaptiveness which was required with the invention of printing—that alone is staggering. If we look at Third World countries today, as technological advancements are introduced, we see the disruption which occurs initially and the adaptiveness which follows. We can look at Korea, for example, with the introduction of the Green Revolution. We find that even this ominous trend of population growth has been modified and adapted to some extent. As individuals have found there can be greater material benefits with smaller family sizes, some adaptation has occurred. With all these human institutions, we can see two consistent factors that encourage adaptiveness: necessity and the presence of incentives.

Let us turn, then, to higher education which also needs adaptation. Unfortunately, it has not quite the automatic response of the biological organism. In fact, in higher education we tend to perpetuate our practices and structures long after they are useful. Look at any list of committees existing in an institution and you can gain a quick insight into this problem. Our species tends to be perpetuated without alteration. Even in the short term, adaptation is hard to accomplish, as you know if you have tried to bring into practice some of the benefits of your wisdom.

For both the short- and the long-term, I think the difficulty with higher education is that we are somewhat insulated from those stimuli which can produce adaptation, and there are very few incentives that we have offered to bring about change internally. In short, we are neither aware of the necessity nor have we provided an adequate incentive structure, but it is needed.

Eric Ashby (1974), speaking of the university, says,

> . . . Let us conjecture regarding the future. It is a dangerous future. Today, universities everywhere face a common peril, the peril of success. Formerly, each of us was a detached organism, assimilating and growing in accordance with its own internal laws. Now, universities have become absolutely essential to the economy and to the very survival of nations. Under the patronage of princes or bishops, they were cultivated as garden flowers of no more significance to the economy than the court musician. Under the patronage of modern governments, they are cultivated as intensive crops, heavily manured, and expected to give a high yield essential to the nourishment of the state. Universities are, then, mechanisms for the inheritance of culture, and like other genetic systems, they have great inertia. They are living through one of the classic dilemmas of systems in evolution; they must adapt themselves to the consequence of success or they will be discarded by society; they must do so without shattering their integrity or they will fail in their duty to society. (p. 7)

What a fascinating thing to contemplate! What an interesting idea—that the need to adapt occurs, not because of failure but because of the consequences of success. We have made ourselves essential—and I firmly believe that—but then, having done so, we are inclined to sit back, rest on our laurels, and continue in the same way, because we have built-in inertia. Nonetheless, pressures are beginning to occur around us to bring about changes, and we must change.

Planning for that change has to occur because, as you all well know, even a lack of planning shapes the future. I think that many of us are experiencing presently the consequences of a lack of physical facilities planning which occurred in the late sixties—finding our facilities in need of renovation and repair, for which we are not prepared. That lack of planning has shaped our future and determined many of our present budget decisions. Changing circumstances necessitate adaptation. Not only the specific plan but the very process of planning must be adaptive.

Let us talk for a few minutes about what the evolution of planning has been, so that I can then address what I think planning should be at this point. In the late fifties and early sixties there were some attempts to begin planning. I remember that some people said, "Well, let us look ahead to the future and see what our curriculum should be like and how many faculty we should add." Quite independently, on the other side of campus, was a group of people saying, "Well, let us look ahead and talk about how our campus should develop." I am sure that many of you have, in your files, elaborate plans for physical plant development, not for renovation and restoration, not maintenance, but plans which suggest great expansion. Do you have some of those around? So do we. There was relatively little integration between this attempt at curriculum development and the attempt at physical plant planning.

These efforts, needless to say, were not very successful. They were unsuccessful not only because they were not integrated but also because, under conditions of growth, not much rigor was required. There was no attempt to consider alternatives and no attempt to consider what would happen if all this support did not develop. We have had to become much more rigorous in our planning under conditions of declining resources, or even stable growth.

As growth continued to occur, federal support burgeoned. As the federal government moved in, it required more of us, necessitating the accumulation of more accurate information. We began to look at the cost of some of our decisions. We developed some rather elaborate systems which attempted to get people to state what their goals were, and those were almost always quantitative kinds of goals—number of faculty, number of pieces of equipment, number of students. We attempted to relate those to future costs, and then we began to translate those into budget plans, plans which did not work very well. Many people did not buy the assumptions of that kind of modeling; the faculty did not understand it and did not believe in it. Often the faculty were not very well integrated into it, and often it was too detailed to give us much heuristic value.

Other planning efforts began here and there; people did not abandon the process. But many of those planning efforts were fragmentary in nature and erratic in execution. One of the problems was that these plans were often stated in such a way that it was impossible to provide any kind of check on their usefulness—how did you know if they were any good? Neither the accuracy of their descriptive content nor their usefulness of predictions was possible to check. However, interest in planning has continued, as evidenced by the many people like yourselves who consider this topic. As I went through the literature on planning recently, I found some common themes which I think provide a definition or understanding of what planning is today.

Planning, according to this collection of articles, is a process in which (a) the present condition is analyzed, (b) goals are stated, (c) information is gathered, (d) the goals are implemented (and usually there is some attention to the strategy for doing that) and, finally, (e) there is feedback from the whole process.

Well, that sounds pretty good. That is, I suspect, the way most of us see it—analysis, goal stating, information gathering, strategy, goal implementation, and, finally, feedback. Why has planning not worked? Maybe you think it *has* worked, but I think that if we marked a scorecard today, we would find that it has not worked as well as it should. It has not worked and, to further compound the problem, it has not been an adaptive process.

The major reason for this ineffectiveness, I believe, has been the failure of the institutions to give the appropriate information to decision makers. The planning processes, then, frequently have not related to decision making. Let me give you some reasons for this situation—not all the reasons but some of the most important ones.

Most of the plans put into practice have never attempted all the steps that I just outlined. I can think of some institutions in my own experience in which people actually did get around to stating goals, but often those goals were stated in such a way as to say, "We are going to get better," without any attempt to talk about what "better" is.

Some people got around to gathering information, but not in relationship to any goals—they just began to gather information. Few people stopped to look outside themselves and ask, "What's happening in the rest of the world, so that we can begin to predict what the climate is for higher education?" Even fewer of these planners have asked, "What is the strategy that we are going to use—a realistic strategy—to attain these final goals?"

A second problem is that most planning exercises have addressed only a portion of the units which should be involved. For instance, they have addressed the department but not the physical plant. We are all familiar with common illustrations of this. How many institutions systematically consider whether or not there is office space before a faculty member is hired? Or another, rather interesting, almost painful example with which I am familiar: How many of us consider what the addition of a radio station on campus will do to our electrophysiological recording? Examples like this abound.

Also, we rarely have systematic integration across units when there is more than one unit that should be involved. For instance, a very reasonable goal for an institution these days would be "to teach students a sense of community." Now, that sounds pretty good, but who should be involved in that? For what unit is that an appropriate goal? It is probably a function of residential life of students, but it should be an academic goal as well.

Such a goal should also be considered in the planning of physical facilities. Certainly, this is a goal that concerns more than one unit within the institution.

Another problem with our planning efforts is that, in many cases, the information we have gathered has been inaccurate, incomplete, too detailed, or not directed to the appropriate questions. In how many institutions do we still get three enrollment figures if we ask three different sources? And I can think of reams of printouts which have reached my desk over a period of time when, as the busy head of a unit, I simply did not have time to sort through them all. I was given so much data I had no idea what these were the answers to, and nobody had bothered to ask me what my questions were. In short, people who are the decision makers often have not been brought into the process. In all fairness to those of you who are institutional researchers, you may have tried and may have found your chief executive officer too busy to say, "These are the questions on which I need information." But until the chief executive officer becomes involved, it does not matter how much planning you do, it is not going to be successful. I can think of some instances in my own office when I have had to make decisions in a very short time span and out there in the institution was relevant information which I did not know existed because we had not spanned that bridge.

We also find that there has been insufficient attention paid to the political considerations in an institution and to the conflict which can be generated by planning decisions. We have built elaborate models based on head count, and we have talked about allocation of resources based on credit hours generated or head counts, only to come into contact with a small, powerful, elite group of faculty in a department who raise so much ruckus that we cannot possibly carry out our model. Or, an out-state group (I am out-state, so I can talk about this), an out-state group of lawyers or athletic fans would say to us, "You cannot do that because this is such an important area." So we need to take into consideration these conflicting interest groups.

We have also often tended to use inappropriate procedures to try to develop our plans. Sometimes we have tried to create new structures to do the planning, perhaps establishing an office of institutional research and planning or bringing in some very high-powered technical experts, but finding that these operations have never been accepted or integrated into the institution. Now, I think it is very good to have an office of institutional research and planning—I have established some—but the point is that it needs to be well integrated into the institution.

Sometimes planners have attempted, instead, to use traditional structures, structures that are so bound by convention and the past that there is no way to advance. In order to do effective planning, we have to know the institution very well, and we have to find out what the appropriate procedure is that will get people to accept what is happening and to accept the consequences of the planning process.

In many of our plans, also, we have tackled too much. How many statements have been written for entire institutions or entire colleges in ways that were so global that no one could ever really understand what was supposed to happen? Who has not been involved in a committee that became so bogged down in writing a mission statement that it never got beyond that point?

Another reason we have not done as well as we might is that we have failed to consider the external conditions of regulation and to provide alternatives. How many of us have made plans, only to have changes in federal funding for students, or changes in state funding for student aid, or the reality of veterans' administration regulations impinging on us, so that even our class sizes might be altered?

A final reason, I think, that planning has not worked as well as it might is that sometimes the people who have tried to plan are themselves so bound by the past that they cannot be very futuristic and so they do not come up with good schemes by which new data can be generated.

Well, enough of what is wrong. What can be done about it? Obviously, some things can be done on the basis of what I have already said: We can tackle less; we can pick the right committee and the right structure to do the job; we can plan for some alternatives; we can make sure that we have analyzed the outside conditions; we can take into account the political conflicts. All of these are tremendously important and should not be minimized. No matter how familiar we are with any planning process, we need to go down that kind of checklist and ask ourselves such questions as these: Have we bitten off too much? Do we have the right people involved? Is there going to be a commitment to this when we finish?

However, beyond the checklist, beyond the steps previously defined, we must consider a new conceptualization of planning. Instead of a set of steps which lead us through a set of procedures, the outcome of which will be a plan, let us think of planning as a set of principles by which decisions can be made. How can that be done? I am going to describe it in the abstract at first and then, lest I lose you, I am going to try a specific example of how that can be accomplished.

First, we need to provide a description of the system in which decisions will be made—not the entire system, just the system for decision making. This can be as broad as a state system of higher education; it can be a system of athletics; it can be a campus; it can be a department; or it can be a system with a very limited function such as equal opportunity. Then we need to try to learn as much about that system as we possibly can—the external conditions which affect it, the past problems, the financial conditions, the likely support in the future, the regulations that are likely to impinge on it, the attitudes of people within and without it. Perhaps this is a little vague; you may say to me, "How do I know what a system is, and how am I going to pick it out?"

Let me suggest at least four criteria that may help as we begin to consider a system. First of all, it is more useful to think of a system as a function, rather than a structure. Second, the system needs to be definable; at least, we need to be able to say what it is *not*. For example, if we talk about "integrity in higher education" as a system, it is going to be pretty difficult to define. Even if we talk about "quality" as a system, that is pretty difficult to define. We need to be able to set the boundary conditions of this system. Third, the system should be significant. We can understand a function of the institution very well and build a model to describe it, but if it does not make any difference, why bother? What we need to do is address first the most important issues, where the most significant decisions are being made. Finally, it should appear possible to understand and explain the system. There may be some things which are very important but too complex to conceptualize in their entirety. We may need to tackle some smaller part first in order to lay the groundwork for understanding the larger unit.

After we have described our system, then we need to try to build a model. What exactly does this mean? I am not suggesting that, initially, it be a mathematical model, but I am suggesting that we try to identify the characteristics of outcomes that can be measured. That is really what we are trying to do—trying to give decision makers something they can work with in order to accomplish some end. We are interested in describing some elements of our system and predicting what variables will influence it, but, finally, what we really want to do is to control the outcome.

The first task, then, is to define very carefully what we want those outcomes to be. If we talk about something like quality, then we have to have some definitions of what we mean by quality. After that, we will try to identify the things which might be related to those outcomes, the things that we think, in our best judgment, might influence those outcomes. This is where *your* experience and *your* wisdom must enter the picture—and you will need to collect the wisdom and experience of people around you. In short, you will need to be adaptive to the setting in which you find yourself. You might have some excellent ideas about variables, but they may have little to do with the particular situation you are addressing. So, pick your outputs and consider what variables may influence those outputs. Then you will need to identify the characteristics of those measurable outcomes and begin to collect the information which might test whether or not you are right. You will really be saying, "I believe that such-and-such an outcome is a function of two or three things." That will direct you immediately to information—not to all the information in the world, but to relevant information—which may be useful in testing whether or not you are right. You look at all the information: past trends, present conditions, future predictions, and then you test to see if, in fact, you can predict these outputs from these variables. You may not be right the first time, but you will learn something. You will go back and say, "Maybe if I had picked a different output, a slightly different value of that output, I would have gotten different results," or more likely, you will say, "There is another variable," or, "I did not measure this well enough." At that point, you will be able to establish the relationship, to reevaluate your model, adapt it, and start again.

Now, how can all this be said a little bit less abstractly? Let us talk about equal opportunity, which is of concern to all of us both as a moral issue and as a practical issue of regulations with which we must comply. The system of equal opportunity in a given institution is something that we can, in fact, *define* within the limits of that institution. It is tremendously important—*significant*—for the reasons that I have described. It is a *function* (and I am talking about a function rather than a structure). Additionally, *understanding* of the system appears feasible, so it is an appropriate choice for a system. Our next step is to ask, "What do we want to happen? If we are successful, how will we know it? What are our goals?" To begin with, we might pick, as goals, the following: (1) increased participation of protected groups, (2) increased retention of members of those groups, and (3) increased institutional satisfaction by members of those groups. We would, furthermore, say that satisfaction should continue to increase, the longer those groups are in the institution. Now, we have identified three very readily identifiable output measures which are our goals. Then we might say to ourselves, "What do we think will bring this about?" Not, "What would we *hope* will bring it about?" but, "What, that is measurable, do we *think* can bring it about?" At that point, we are going to gather a lot of information; we are going to talk with many people and ask, "What do *you* think about this?" and we are certainly going to consult with members of minority groups. At this point, we are going to begin to make some guesses as to the variables that will influence the desired output. For instance, we might determine the number of recruitment contacts, the location of those contacts, the attitudes of students already present, the attitudes of minority faculty, the attitudes of non-minority students and faculty, the financial aid available, the salary structure, the social opportunities, and the diversity of programs in which minority students are presently enrolled—in other words, what are the choices available? That is a pretty complicated list, and we may or may not choose to try to collect all of this information at once. We may choose, instead, to focus on those variables most closely related to the outcomes in which we are interested.

It is very important here—and this is a particularly good illustration of this point—*not to select the means as an output goal.* We must be careful not to satisfy ourselves with the number of recruitment contacts as an end rather than a means. We must be careful not to think that if we increase the number of recruitment contacts we have gotten there. Let us be very careful in defining our final output. We do not just want to increase the recruitment contacts—we may give up recruitment altogether if we build a good model and find out it is not related. What we *do* want is increased participation, so we must keep clear the distinction between means, or process, and end.

After we have selected our outputs and have made a guess as to what variables might be related, we can then begin to collect information on how each is or is not, in fact, related. We can look at some trends; we can do some statistical tests; we can see which factors begin to predict our outcomes better than others; in short, we can put together a model. If we are successful at this, our decision makers will have some very good information upon which to act. Instead of our sitting around and saying, "Wouldn't it be nice if we could increase participation?" or, "Based on what I heard last week down the hall, I think probably if we went into a particular area for our recruitment contacts we might do better," or any one of many other hypothetical questions, we will have some information to hand our decision maker that says, "If we increase a particular activity, our participation should increase because it has in the past." This will help that decision maker—who is really going to be pressed for results—to refine the goals much more effectively than ever before.

As we see relationships develop, we are going to refine our systems and get better and better at it. In short, we are going to adapt to the information that we find, and we are going to build different kinds of models. Not only that, we are going to find that our very goals will change. T.S. Eliot has said, "Purposes alter in fulfillment," and so is planning a constant, interactive, adaptive process. I do not believe it will ever be finished because the conditions will constantly be changing and that "system" will continually need to reflect the change. Was there ever a more appropriate time to remember, with Heraclitus, "Nothing endures but change."

References

Ashby, E. *Adapting universities to a technological society.* San Francisco: Jossey-Bass Inc., 1974, p. 7.

Thomas, L. *The lives of a cell.* New York: The Viking Press, 1974, p. 126.

CATASTROPHE MODELS IN ADMINISTRATION (Forum address)

E. C. Zeeman
Professor, Mathematics Institute
University of Warwick, United Kingdom

(Note: The paper which follows was prepared by Dr. Zeeman on the topic of his Forum address at the Tuesday morning general session.)

Catastrophe theory is a method of modelling introduced by René Thom, based on recent theorems in mathematics (Thom, 1972; Zeeman, 1977). It is particularly suitable for modelling phenomena where continuously changing forces produce discontinuous effects. Such phenomena abound in administration: for example, gradually changing circumstances may necessitate major changes of policy; gradually increasing pressures may cause individuals or groups to react suddenly.

Usually continuous causes produce continuous effects, and if the effect is discontinuous it may come as a surprise; that is why Thom chose the name "catastrophe" to emphasise the unexpectedness. On the other hand, in human affairs the discontinuous effect at a critical moment is so common an experience that it has long been enshrined in proverbs such as "reaching the end of one's tether," "the straw that breaks the camel's back," "a stitch in time saves nine," or "a stone thrown at the right time is better than gold given at the wrong time," or in quotations such as this:

> There is a tide in the affairs of men,
> Which, taken at the flood, leads on to fortune;
> Omitted, all the voyage of their life
> Is bound in shallows, and in miseries. (Shakespeare, 1599)

or this:

> Catastrophes come when some dominant institution, swollen like a soap-bubble and still standing without foundation, suddenly crumbles at the touch of what may seem a word or an idea, but is really some stronger material force. (Santayana, 1944)

What catastrophe theory may be able to offer is a more systematic approach to certain problems. Amongst other things, it provides a few geometric shapes called "elementary catastrophes" that are like universal proverbs in the sense that they are independent of language and describe the typical equilibrium states of a dynamical system. Using one of these shapes to model a phenomenon involves labelling the axes, identifying the various surfaces, and interpreting the meaning of the jumps between them. The purpose of a model would be to give a global insight and reduce the arbitrariness of description, to synthesise various observations that might otherwise appear disconnected, to reveal relationships that might otherwise appear unrelated, to explain features that might otherwise appear inexplicable, and to suggest possibilities that might otherwise be unsuspected. Such a model can be used as a tool for discussing not only the validity of its conclusions but also that of its underlying assumptions; even if these assumptions turn out to be invalid, the model can sometimes still be useful in focusing attention upon the fundamentals of a problem. Some models have also been used for quantitative prediction although, as with any other method of modelling, the accuracy of prediction will depend upon the accuracy of fitting past data and the validity of extrapolating from past to future.

In this paper we shall describe briefly the following ten examples of applications, without going too deeply into any one, in order to illustrate the variety of ways the method can be used.

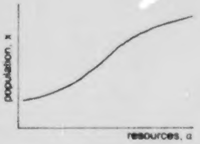
1. Endangered species
2. Endangered institutions
3. Soft and hard monetarism
4. Obsolescence versus need
5. Fear and rage
6. Territorial defence
7. Job satisfaction
8. Committee behaviour
9. Ideologies
10. Decision making.

In all the examples, we shall use the cusp-catastrophe since, of the elementary catastrophes, this is the unique one in three dimensions, and the simplest non-trivial one to understand. For a list of the more complicated elementary catastrophes and examples of their applications, and for mathematical proofs of their uniqueness, the reader is referred to Thom (1972), Zeeman (1977), and Poston & Stewart (1978).

Example 1: Endangered species

We begin with a biological example because social structures often behave like biological species, as our next example will show. This example was stimulated by discussions with Vivien Gledhill of the World Wildlife Fund.

For simple species like bacteria, an abundance of food or resources will cause an increase in the population, while a shortage of resources will cause a decrease, as illustrated by the smooth graph in Figure 1.



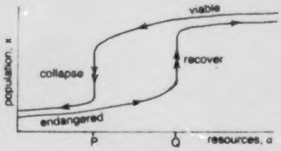


Figure 1. *Graph of a simple species showing continuous behaviour.*

Figure 2. *Graph of a complex species showing discontinuous behaviour, and illustrating catastrophic jumps, hysteresis, bimodality, and inaccessibility.*

On the other hand, if we consider a complex species like a mammal, a temporary shortage of resources may not affect the population because the species may have evolved social structures or other adaptations that buffer it against variations in the food supply; however, if the resources decrease beyond a critical threshold P, then this may cause the population to collapse until the species reaches an endangered state, where it may be threatened by extinction, as shown by the upper graph in Figure 2. Moreover, as ecologists have discovered, it often takes considerably greater resources to rescue an endangered species than to maintain a viable one, and the threshold Q, where it will recover and rapidly reestablish itself again in a viable equilibrium with its environment, may well be considerably higher than the point P of collapse, as shown by the lower graph in Figure 2.

The discontinuities at P and Q are called *catastrophes* or *catastrophic jumps*, and the difference between P and Q is called *hysteresis*. Let x denote the population. In between P and Q there are two possible states, either viable at a high x, or endangered at a low x, and which of the two pertains will depend upon the recent past history of the resources. This property of there being two possible states is called *bimodality*. Notice that the intermediate values of x are inaccessible, because the species cannot survive in equilibrium at an intermediate population level, whatever the resources; this property is called *inaccessibility*. These four properties of catastrophe, hysteresis, bimodality, and inaccessibility are intimately related to one another. They are also related to another property called *divergence*, as we shall explain in Example 3 and Figure 5.

The cusp-catastrophe. If we introduce a factor representing complexity (and normalise the resources and population appropriately so as to be able to compare different species) then we can incorporate Figures 1 and 2 in a three-dimensional graph, as shown in Figure 3. This graph is called a *cusp-catastrophe*. For a mathematical treatment of the cusp-catastrophe, see Zeeman (1977)*; here it suffices to say that it is a surface S in three dimensions representing the graph of population, x, as a function of the two factors: resources, a, and complexity, b. Figures 1 and 2 are given by taking sections b = constant, Figure 1 corresponding to the back of the graph and Figure 2 to the front.

We call x the *behaviour variable* and a,b the *control factors*. The horizontal plane C is called the *control space*, and a point c = (a,b) in this plane is called a *control point*. The implicit assumption behind the graph is that there is some underlying dynamical system that causes x to seek an equilibrium value. The dynamic, and hence the equilibrium, depend upon the control point, and as the latter varies in C, the equilibrium points trace out the surface S above.

Although S is a smooth surface, it is folded over in such a way that when the fold curves project down to C they form a cusp PKQ, with the cusp-point at K. As a result of this folding, the surface is

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*The standard model has formula $x^3 = a + bx$, but a cusp-catastrophe can be any surface differentially equivalent to this.

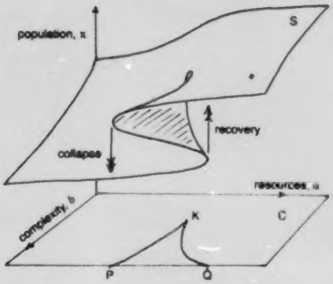


Figure 3. *Graph showing how the population depends upon the resources and the complexity of a species, combining Figure 1 (at the back of the graph) and Figure 2 (at the front). A graph of this shape is called a cusp-catastrophe; the resources are called a normal factor, and the complexity is called a splitting factor.*

single sheeted over the outside of the cusp and three-sheeted over the inside. However, of these three sheets, we can ignore the middle one, shown shaded in Figure 3, because this represents unstable equilibria that will not be observed in practice. Meanwhile, the rest of S represents stable equilibria. If the control point c lies outside the cusp, then x tends to a unique equilibrium value given by the unique point on S above c. Meanwhile, if c lies inside the cusp, then x is bimodal because there are two stable equilibrium values of x corresponding to the two points on the upper and lower sheets of S above c. If the point lies on the upper sheet and c is moved to the left across the left-hand branch PK of the cusp, then this will cause a catastrophic collapse; conversely, if the point lies on the lower sheet and c is moved to the right across the right-hand branch QK of the cusp, then this will cause a catastrophic recovery.

We call a the *normal factor* since it correlates with x, and we call b the *splitting factor* since it splits S into the upper and lower sheets. One of the consequences of this rather simple model is that there is complexity threshold for catastrophic response; in other words, there is a level of complexity, represented by the cusp point K, below which a species will respond continuously, as in Figure 1, and above which it will respond catastrophically, as in Figure 2. Moreover, the greater the complexity, the greater will be the catastrophes because the split in S widens, and the greater will be the hysteresis because the cusp widens. In other words, the more complex the species is, the longer it will manage to survive against diminishing resources but the more dramatic will be the collapse when it eventually comes and the greater will be the resources necessary to effect a recovery.

Example 2: Endangered Institutions

We shall now apply the ideas of the last example to the current problems of reduced public expenditure. This example was stimulated by discussions with Craig Johnson (1980), president of the Association for Institutional Research. Instead of species, we shall consider public services such as social security, roads, schools, universities, etc., and instead of population, the variable x will represent the quality of the service provided (measured on some scale running from very good to very bad). We use the same two control factors, resources and complexity.

Some services are "simple" in the sense that the quality is proportional to, or depends continuously upon, the resources allocated to it, as in Figure 1. For example, if a social security benefit consists of individual payments to many people, and if the resources are doubled, then the payments will be twice as valuable; or if halved they will be only half as valuable.

On the other hand, some services are "complex" in the sense that they are buffered against temporary financial shortage, as in Figure 2. For example, a university can often maintain its quality, despite cuts, by retaining most of its staff and by preserving the complex infrastructure of its organisation. However, if the cuts are too deep or too long, this may cause so great a loss of staff, or so damaging a blow to the infrastructure, that the quality may suddenly collapse. And then the hysteresis shows that it will require a much greater reallocation of resources before recovery is possible. Of course, the moral of this story is well known: had the administrators of the university been able to persuade their financial supporters to redeploy some of those resources before the collapse, then the collapse might have been averted and the university would have been able to maintain its high quality at a fraction of the cost that subsequently proved necessary to rescue it. What those administrators needed at the critical moment was a communication tool that would help to emphasise the qualitative difference between theirs and other services, give warning of the impending collapse, and help to convince their listeners of its consequences. The cusp-catastrophe in Figure 3 is such a tool, especially if it can be reinforced with quantitative estimates in a particular case.

Example 3: Soft and hard monetarism

We now apply the same idea to another current problem, that of inflation. There is an ongoing debate amongst economists as to whether or not inflation can be cured by monetarism. The two main hypotheses of monetarism are these:

1. The money supply determines the rate of inflation.
2. The larger the money supply, the higher the rate of inflation.

Hypothesis 1 is controversial, since opponents of monetarism say that there are also other important factors influencing the rate of inflation. However, for the purpose of our model, let us assume that these other factors are kept constant so that 1 holds; then most economists would agree with 2. Let a denote the money supply and let x denote the rate of inflation. The analogy with Example 1 is that, just as a species consumes its resources and expands, so an economy consumes its money supply and inflates.

Now comes the question: does x depend continuously or discontinuously on a? It is this question that separates the "soft" monetarists like the Friedmans (1980) from the "hard" monetarists like Hayek (1960). Therefore, let us use those adjectives to define two types of economy, as follows. We call an economy *soft* if x depends continuously on a, as in Figure 1. We call an economy *hard* if x depends discontinuously on a, in the sense that if both a,x are high and a is reduced, then x will remain high until a threshold P is reached, where a stabilisation crisis will occur and the inflation will suddenly collapse, as in the upper graph in Figure 2. For example, this happened in the great German hyperflation of 1923.

The difference between soft and hard economies is analogous to the difference between the simple and complex species in our first example. A soft economy is like a simple species because it responds obediently to monetary control just as a simple species responded, in our example, to reductions in its resources. On the other hand, a hard economy is like a complex species because it is buffered against reductions in the money supply just as a complex species was buffered against reductions in its resources. This buffering may be due to many factors: for example, higher interest rates may attract overseas investors, multinational firms may be able to maintain liquidity despite monetary controls by transferring capital from abroad, or unions may be able to sustain strikes for higher wages by drawing upon savings. As an economy becomes more sophisticated and more interlinked with other economies, it may develop a variety of such buffering devices and, so, may gradually become harder, in our sense.

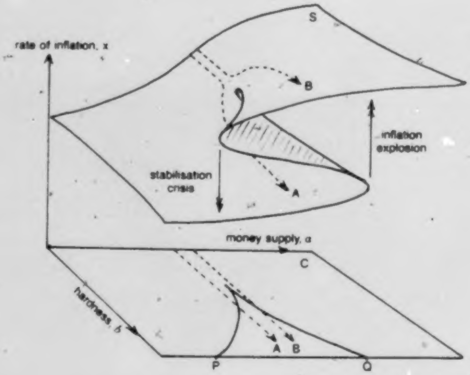


Figure 4. *Cusp-catastrophe model showing how the rate of inflation depends upon the money supply, as a normal factor, and the hardness of the economy, as a splitting factor. The graph shows the phenomenon of divergence, not present in Figure 3, illustrated by two similar economies, A and B, which start close but end on very different levels of the behaviour surface S.*

If hardness is taken as a splitting factor, *b*, then both types of economy can be incorporated on a cusp-catastrophe, as shown in Figure 4. The back of the diagram represents soft economies and the front represents hard economies.

We now examine some of the deductions from the model. Firstly, although we only defined a hard economy from the point of view of reductions in the money supply, the model predicts dually that a hard economy will maintain a low inflation under increases in the money supply until a threshold Q is reached, when there will be a sudden inflation explosion, as happened in the United Kingdom in 1972.

Secondly, we have a feature in this example that was not present in the two previous examples, because an economy may become harder. For example, in Figure 4 the two dotted paths in the control space represent the gradual hardening of two similar economies, except that the path of A passes to the left of the cusp-point while the path of B passes to the right. As a result, A will gradually develop low inflation while B will gradually develop high inflation, as shown by the dotted paths on the surface above. Even though the conditions of money supply and hardness of the two economies are very close, their resulting inflations will diverge. This phenomenon is called *divergence*.

A common fallacy in the social sciences is to imagine that a phenomenon displaying divergence cannot be modelled mathematically. On the contrary, the cusp-catastrophe shows that some examples of divergence can not only be modelled, but that divergence is natural, predictable, and intimately related to other properties such as bimodality, catastrophe, hysteresis, and inaccessibility, as shown in Figure 5. If a phenomenon exhibits any one of these five properties, it should be quickly checked to see if it also possesses any of the others, and if it does, it should be checked to see if it can be usefully modelled by a cusp-catastrophe.

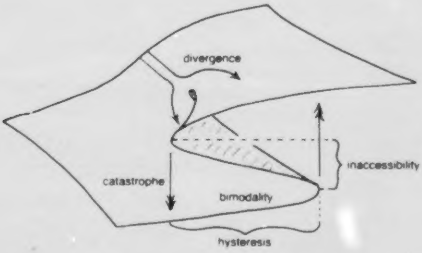
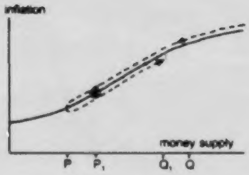


Figure 5. *Illustration of five properties of the cusp-catastrophe.* Bimodality *is found over some points of the domain;* catastrophes, or sudden jumps, *between the two sheets are observed; the jump from top to bottom sheet does not take place at the same point as the jump from bottom to top, which is called the* hysteresis *effect; at the front of the graph there is an* inaccessible *range of value in between the top and bottom sheets, and paths directed towards the front but passing either side of the cusp-point exhibit* divergence.

Thirdly, let us consider the policies for curing inflation. The hard policy (Hayek, 1980) for curing inflation in a hard economy is swift and drastic, as is illustrated by the dotted line in Figure 7. The money supply must be reduced below P, causing the inflation to collapse in a stabilisation crisis; then, as soon as the inflation has stabilised, the money supply can be increased to Q_1 in order to get the economy expanding again, without fear of reinflation. For example, this policy proved successful in Germany in 1924 because the economy was expanding again in less than a year after the great hyperflation. However, if the government believed the economy to be soft, then such a policy of first reducing the money supply below P and then increasing it again to Q_1 a year later, as illustrated by the dotted line in Figure 6, would not only appear pointless but also be derided as a "U-turn."

By contrast, the soft policy (Friedman & Friedman, 1980) for curing inflation in a soft economy is to reduce the money supply to P_1, as indicated by the blob in Figure 6, and hold it there until the inflation has died down. This is not as harsh as reducing it to P because it softens the immediate impact on the rising unemployment, and the pursuance of such a policy is often called "gradualism." However, we see from the blob in Figure 7 that if the economy happens to be hard, then a soft policy will have little effect upon the inflation. Moreover, as Hayek (1980) and Kaldor



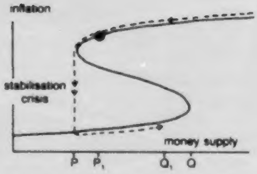


Figure 6. *Graph of a soft economy, showing how a reduction in the money supply followed by an expansion causes a reduction in the inflation followed by a reinflation (dotted line).*

Figure 7. *Graph of a hard economy, showing how a sufficient reduction in the money supply followed by an expansion causes a stabilisation crisis with no subsequent reinflation (dotted line).*

(1980) point out, the long-term effects of the soft policy of holding the money supply down to P_1 could be much more harmful than those of the hard policy: the soft policy could gradually run the economy down and, by provoking a deep recession over a long period, could cause the unemployment to rise steadily to a level much higher than that which would have occurred under the hard policy.

Today the prevailing fashion is to pursue soft policies in spite of the fact that most industrialised countries appear to have developed hard economies, and so, as the model predicts, monetary gradualism seems to have had only mediocre success in curing inflation (cf. United Kingdom, Israel, 1980).

Digression on quantitative analysis and the underlying dynamic. This digression may be omitted on first reading by those who prefer to see some more examples first.

In the examples so far, and in all the examples in this paper, we have confined ourselves to qualitative discussion in order to present the main ideas more succinctly. Quantitative testing of a model involves choosing axes that are measurable, making measurements, and fitting data (see, for instance, Zeeman, 1977, and Cobb, 1977). Fitting data is technically non-trivial because the shapes involved are non-linear, and most statistical techniques are based on linear averaging devices that tend to suppress, rather than reveal, the very discontinuities that we are interested in. Cobb describes a procedure for fitting given data in three dimensions by a cusp-catastrophe linearly equivalent to the standard model (which is a good approximation near the cusp-point).

At this juncture the reader may well ask, What is so special about the cusp-catastrophe? What is the theoretical justification for assuming that our data might lie on a surface S of this particular shape? The answer is that we are implicitly assuming that there is some dynamic D underlying the phenomenon and that S is the set of equilibria of D. In other words, the existence of D implies the choice of S. But then if D is so important, why is it only implicit? Why can't we make D explicit like S? If we can measure S, why not also measure D? The reason is that, in general, D is too complicated. Admittedly, in certain examples in physics it may be possible to compute D, for instance when D is derived from conservation principles or some physical law, like gravity. In the social sciences, however, D is usually far too complicated to measure and may be impossible to compute. The fact that S may look deceptively simple does not necessarily imply that D is simple. The fact that S is a surface in three dimensions, as in Figure 4, does not necessarily imply that D is three-dimensional; on the contrary, D might be a family of differential equations in 100 dimensions.

For instance, let us examine the implicit assumption underlying our last example about inflation. Firstly, we assume it is possible to measure the money supply, a, and the hardness, b, of an economy. Then $c = (a,b)$ is the control point in a two-dimensional control space C. Secondly, we assume we can determine the state of the economy by measuring the rate of inflation, x, as well as many other variables y,z,. . . . For argument's sake, suppose there are 99 other variables. Then, together, the 100 variables x,y,z,. . . determine a point in a 100-dimensional space X. Thirdly, we assume that for each c in C there is a differential equation D_c on X, describing how the economy will evolve if c is kept constant. Let D denote the family of differential equations $\{D_c\}$, parametrised by C. Fourthly, we assume that the solutions of D_c tend to equilibrium points, that the whole family D is generic, and that x is a generic coordinate. Let S denote the set of equilibrium points. It is a theorem (Zeeman, 1977) that S is a two-dimensional surface. However, S is somewhat difficult to visualise because it is sitting inside the 102-dimensional space $C \times X$, since each equilibrium point has coordinates (a,b,x,y,z,. . .). The trick now is to forget the last 99 coordinates and plot the equilibrium point at (a,b,x) in three dimensions. This has the effect of immersing S in three dimensions but introduces the snag that, globally, S may have self-intersections. Locally, however, our assumptions imply that each small piece of S is embedded without self-intersections. Now comes the remarkable classification theorem (Thom, 1972, and Zeeman, 1977): if we consider a sufficiently small piece of S, then only three alternatives can occur—(1) it is a cusp-catastrophe as in Figure 4, with two fold curves coming to a cusp-point, (2) it has only one fold curve, or (3) it is like a landscape without any fold curves. Of these, the cusp-catastrophe is the most complicated and interesting alternative, and since our assumptions were very general, this is the main justification for using the cusp-catastrophe as a plausible hypothesis for a variety of phenomena. Had we assumed there were more than two control factors, then we might have been required to use a higher dimensional elementary catastrophe.

To summarise: a cusp-catastrophe model can look deceptively simple, and the fitting of data into such a model is conceptually easy although technically non-trivial. However, seeking an explanation of why it occurs may involve looking for the underlying dynamic which may be very complicated. For instance, in our inflation example, the dynamic is liable to be as complicated as a large-scale computer model of the economy with hundreds of variables.

We conclude the digression with a word of warning: some elementary expositions of catastrophe theory (for example, Sussmann & Zahler, 1978) give the misleading impression that an application of the cusp-catastrophe depends upon minimising a potential function in one variable. This is not only a fundamental misunderstanding of the dynamic, but it can also trivialise applications by unrealistic oversimplification. On the contrary, one of the advantages of catastrophe theory is that it enables us to model equilibrium states explicitly while leaving the underlying dynamic implicit.

Example 4: Obsolescence versus need

Before leaving finance, we give an example in accountancy. When an accountant is estimating the value of a piece of equipment in order to calculate its depreciation, he (or she) sometimes finds that obsolescence and need are conflicting factors influencing this assessment. "Our computer," he may say, "is obsolescent; therefore I have depreciated it to zero and so we need some money to buy a new one." Then next year, after the new computer has been purchased, he may come back and say, "Demand for computer time has increased so much that we still need to keep the old computer; therefore I have revalued it and so we need some more money to update it." As a result, he may lay himself open to the criticism of inconsistency. What he needs is a model to help explain the logic behind his valuations, as follows.

We have two conflicting factors, obsolescence and need, influencing the valuation. The word "conflicting" suggests bimodality—in other words, it suggests a cusp-catastrophe with the conflicting factors lying on either side of the splitting factor, as shown in Figure 8. The history of the

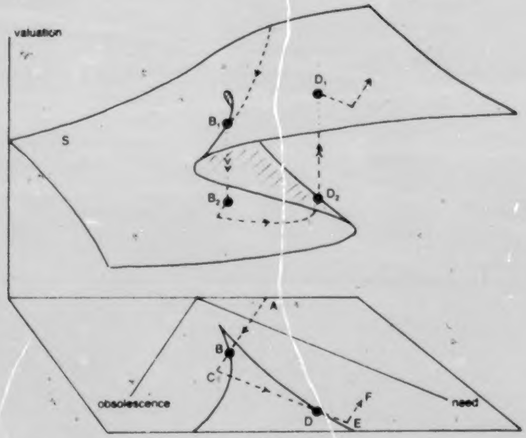


Figure 8. *Cusp-catastrophe model showing how valuation depends on the conflicting factors of need and obsolescence. The simple cause and effect relationship between need and value is complicated by the effect of obsolescence over time (dotted line).*

old computer is shown by the dotted path ABCDEF in the control space. From A to C it gradually becomes more obsolescent, crossing the left-hand side of the cusp at B where the valuation suddenly drops from B_1 to B_2. Then from C to E the need for it increases, crossing the right-hand side of the cusp at D where the valuation suddenly increases again from D_2 to D_1. Finally, the updating E to F consolidates its high valuation on the upper sheet of S.

Example 5: Fear and rage

We now turn from finance to psychology, to the behaviour of individuals and groups. In two writings (Zeeman, 1971 and 1977), I suggested that the following phenomenon might be modelled by a cusp-catastrophe: fear and rage are conflicting drives influencing the aggressive mood (see Figure 9). Let us check the five properties: fear only induces a flight mood, rage only induces a fight mood, while a combination of both drives may induce either fight or flight, verifying both the *bimodality* and the *inaccessibility* to normal moods. The persistence of mood is evidence that mood is a manifestation of an underlying stable equilibrium state of the brain*. *Catastrophes* occur when changes in the drives cross a cusp line, causing the stability of the equilibrium state underlying the existing mood to break down and, hence, causing the mood to switch suddenly from fight to flight or vice versa. The persistence of mood is also evidence for the *hysteresis*, because after such a switch, it generally takes a noticeable delay before the mood can switch back again. Finally, the evidence for *divergence* is the dependence of mood upon the recent past history—for instance, whether the rage or the fear arose first.

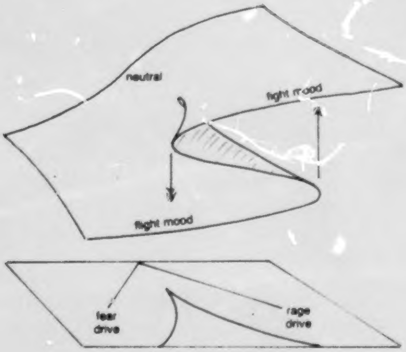


Figure 9. *Cusp-catastrophe model showing how the fight and flight model depends upon the conflicting factors of rage and fear. When both are present normal moods are inaccessible, as is typically found in administrative problems.*

It is important to emphasise that this is a model of mood rather than behaviour, which is much more complicated and consists of a pattern of responses, routines, subroutines, and innovations appropriate to the circumstances, which is selected by the cortex within the general framework of the prevailing mood. In Zeeman (1977, page 6), I labelled the catastrophic switch from flight to fight in Figure 9 as the "attack catastrophe," and this misled two critics (Sussmann & Zahler, 1978), who evidently cannot have read the accompanying text, into drawing the fallacious conclusion from the model that "an angered dog cannot attack," whereas what they should have concluded was that a dog in a fight mood cannot suddenly switch from a flight mood into a fight mood (because it is already in one).

Animals often signal their switches of mood by facial expressions or bodily changes and instinctively recognise those signals in others. By contrast, humans learn to hide their switches by making their facial expressions, although their bodily changes, such as the alterations in colour or respiration, can sometimes give the game away. Introspective observation of one's own changes of mood is both entertaining and illuminating.

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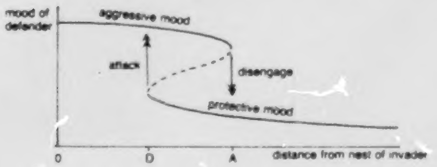
*By an "equilibrium state of the brain" we mean an attractor, probably an oscillatory attractor, of the dynamics of the mood-generating mechanism of the brain, which is probably located in the limbic system, from which there are pathways to the hyperthalamus, which activates the bodily responses that we sometimes call feelings, and from which there are further pathways to the frontal lobes, where we probably experience the mental responses that we sometimes call the mood. Although the dynamics involved and, hence, also the set of moods must be highly multidimensional (the reason there is no single vertical axis in Figure 9), nevertheless the use of the cusp-catastrophe is justified by the fact that it can also describe the bifurcations of oscillatory attractors (Zeeman, 1977, Chapter 9).

Administrative problems can frequently induce fear and rage—for example, fear of loss of position, money, time, power or influence, and rage at the stupidity, folly, or knavery of others (Cornford, 1908). One of the useful features of the model is that it draws attention to the property of inaccessibility under these circumstances and may, therefore, improve our understanding of ourselves and others. For example, if an individual is subjected to the simultaneous stresses of fear and rage, he or she may be denied access to normal moods and, hence, to rational thought, may be forced to oscillate between a fight mood, in which arguments become irrational, and a flight mood, in which concessions are made. If the stresses are more severe, the individual may even be denied access to those behaviour patterns and be forced to oscillate between abuse and apology. Sometimes only withdrawal from the scene will allow the fear and rage to subside sufficiently for the person to recover access to normal moods and rational thought.

Example 6: Territorial defence

In order to test the previous model, I suggested in 1977 that territorial fish might be a good species to observe and test experimentally. Imagine a fish sitting on his* nest in a protective mood, watching the approach of another male of the same species. When the invader reaches a distance D from the nest, the mood of the defender will switch to aggressive, and he will attack and chase the invader away until they reach a distance A from the nest, where his mood will switch back to protective again, and he will return to the nest. Hysteresis implies $D < A$, as in Figure 10. Therefore, the model predicts that the *defence perimeter*, radius D, will be smaller than the *attack perimeter*, radius A.



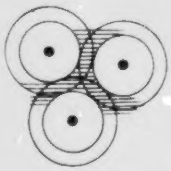


Figure 10. *Graph showing how the defender's mood depends on the distance of the invader, creating a double perimeter to the nest.*

Figure 11. *Representation of the double perimeter which creates a buffer zone between nests (or academic departments) through which other fish (academics) can swim freely (pursue transdisciplinary subjects) without being attacked.*

The concept of a double perimeter, suggested by this model, was a new idea to animal behaviourists. It stimulated the biologists, Colgan, Nowell and Stokes (to appear) to investigate the nesting of pumpkinseed sunfish in their natural habitat in Lake Opinicon, Kingston, Ontario, and to test them with a wooden dummy invader. They confirmed the prediction; for example, they found, with the dummy in an aggressive posture during the nest-building phase, that the average values in 61 trials were D = 13cm., A = 18cm. Thus, the distance of the invader from the nest was a normal factor governing the mood of the defender. I had also suggested that the size of invader might be a conflicting factor, but this prediction turned out to be wrong. Instead, the biologists discovered that the phase of the mating season was a splitting factor—for example, during the spawning phase, when the male allows the female to come in and lay her eggs, the hysteresis, A-D, decreases to zero, and, then, during the rearing phase it increases again.

The hysteresis is maximal during the initial nest-building phase, and this automatically ensures that the outer perimeter of one territory will never overlap the inner perimeter of another territory; otherwise, there is the potential danger of both owners finding themselves in an aggressive mood in the overlap region, which could lead to a serious fight, ending with the loser moving his nest. As a result, the closest packing of the nests is shown in Figure 11.

One of the most interesting consequences of this packing is that it automatically leaves a buffer zone, shown shaded in Figure 11, through which other fish can swim freely without being attacked. Thus, the buffer zone is an evolutionary advantage arising from the naturally occurring hysteresis in the dynamics of the brain. Notice that if the nests are packed as closely as possible, there will be no room to set up any more nests in the buffer zone.

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*Amongst the pumpkinseed sunfish, it is the male who builds the nest, guards the eggs, and looks after the fry.

Let us now apply these ideas to university departments, which tend to occupy territory amongst the academic disciplines. Academics are allowed, and may even be encouraged, to swim freely in the buffer zones between adjacent departments in order to study transdisciplinary subjects. They are tolerated as long as they do not attempt to form too large a group. However, if they do reach a critical size and begin to take over territory, then all sorts of squabbles are likely to break out (for instance, over staff, students, lectures, examinations, laboratories, equipment, finance, authority, and hierarchy). Groups begin to act like individuals, sharing mutual fear and rage, worry and indignation, and protective and aggressive moods. Michael Thompson (1979, Chapter 8) has studied what further happens when the transdisciplinary groups grow to outnumber the departments, and using another cusp-catastrophe model, he predicts a catastrophic breakdown of the whole institution. He analyses some cases where this actually occurred.

Example 7: Job satisfaction

We now turn from the immediacy of mood to the longer term phenomenon of job satisfaction. This is a model of J. Roberts (1972) based on the motivation-hygiene theory of F. Hertzberg (1966, Chapter 6) who, with Mausner and Snyderman (1959) made a survey, in depth, of 200 engineers and accountants, representing a cross section of Pittsburgh industry. They were all asked about events they had experienced at work which had resulted in either a marked improvement or a marked reduction in their job satisfaction. Five factors stood out as strong determiners of satisfaction: achievement, recognition, work itself, responsibility, and advancement; so these were called *motivators*. Meanwhile, when dissatisfaction events were coded, an entirely different set of factors emerged: company policy and administration, supervision, salary, interpersonal relations, and working conditions; so these were called *hygiene factors*. Hertzberg concluded that

> the principal result of the analysis of this data was to suggest that the hygiene or maintenance events led to job dissatisfaction because of a need to *avoid* unpleasantness; the motivator events led to job satisfaction because of a need for growth of self-actualization. At the psychological level, the two dimensions of job attitude reflected a two-dimensional need structure: one need system for the avoidance of unpleasantness and a parallel need system for personal growth.

Roberts suggested that hygiene was a normal factor and motivation a splitting factor influencing job satisfaction, as shown in Figure 12. The extra predictions that the cusp-catastrophe model gives to the Hertzberg theory are as follows. Firstly, the job satisfaction of relatively unmotivated individuals is smoothly correlated with the hygiene factors. Secondly, motivated individuals can remain enthusiastic in spite of deteriorating hygiene factors but, at the last straw, will suffer

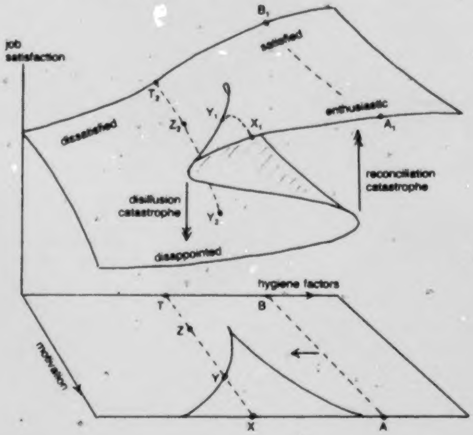

Figure 12. *Cusp-catastrophe model showing how job satisfaction depends upon hygiene factors, as normal factors, and motivation, as a splitting factor. The highly motivated are susceptible to catastrophic disillusionments and reconciliations.*

catastrophic disillusionment; conversely, they can remain disappointed under improving hygiene factors but be susceptible to a catastrophic reconciliation if there is sufficient improvement. The more motivated they are, the more pronounced will be these symptoms. It would be interesting to reexamine the Pittsburgh data, or make further studies, in the light of these predictions.

Thirdly, the model offers an interesting global prediction: in an institution, one would expect individuals to vary in their motivation; therefore as a first approximation, we might imagine them to be spread along the line AB in the control space parallel to the splitting factor, shown dotted in Figure 12. Their job satisfaction would vary from enthusiastic at A_1 to satisfied at B_1. If financial cuts caused a deterioration in the hygiene factors, this would cause the line to move to the left. By the time it had reached the position XYZT in Figure 12, the institution would have divided itself into three groups: the highly motivated along X_1Y_1 would have retained their enthusiasm; the least motivated along Z_2T_2 would have gradually become less satisfied; but the moderately motivated in between, along Y_2Z_2, would have suffered catastrophic disillusionment and be much more dissatisfied with their jobs than the rest. The enthusiasts at Y_1 would be the most vulnerable because they would be poised on the brink of disillusion, while those at Y_2 would be so entrenched in their disappointment as to be impervious to any improvement.

Example 8: Committee behaviour

Committees are democratic. And yet they are notoriously unreliable. How do we resolve the paradox of these two apparently contradictory statements? The answer lies in a model that exhibits both forms of behaviour.

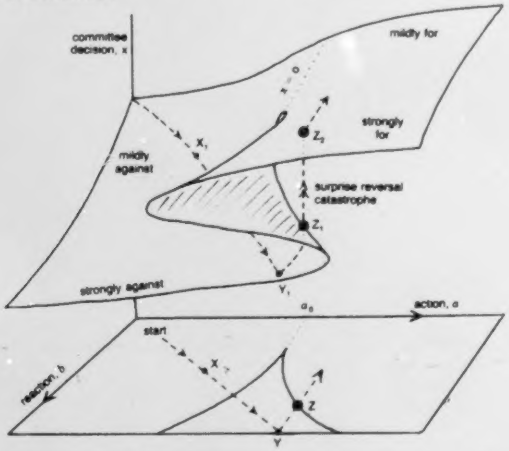

Figure 13. *Cusp-catastrophe model showing how the strength of a committee decision depends upon action, as a normal factor, and reaction, as a splitting factor. The model resolves the paradox between the unreliable yet democratic process, and suggests strategies for individuals (dotted line).*

Figure 13 is a model of a committee's decisions concerning some policy. The normal factor, a, represents the action in favour of the policy by its supporters; the splitting factor, b, represents the reaction against the policy by its opponents; and the behaviour variable, x, represents the strength of the resulting decision by the committee. If (a_0,b_0) are the coordinates of the cusp-point, and if o is the x-coordinate of the point above on S, then the decision will be for or against the policy according as $x \gtrless o$. (The dividing line $x = o$ is shown dotted in Figure 13.) Therefore a_0 represents a threshold that the action must pass if the policy is to be accepted. If there is little reaction, then the decision will be positive or negative according as $a \gtrless a_0$, and the strength of the decision will correlate with the strength of support. On the other hand, if there is a strong reaction, then the options will be split in the sense that the committee will have to decide either firmly for or firmly against the policy; a neutral or moderate decision will be inaccessible*. The committee may itself be split in the sense that if the paths of its members are plotted on the surface S in Figure 13, then some paths may finish on the top sheet while others may finish on the bottom sheet; then voting is a formalised ritual for enabling the minority to jump catastrophically onto the opposite sheet without loss of face, to join the majority so that the committee can act as one. This justifies the modelling of the committee's behaviour as the path of a single point moving over S. A catastrophe represents a sudden reversal of decision, as might be caused by further action after a reaction.

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*There is a more sophisticated model using the butterfly-catastrophe, which is a higher dimensional analogue of the cusp-catastrophe and in which there is a third option of compromise opinion, provided the reaction is not too great (see Zeeman, 1977, Chapter 10).

When proposing a controversial matter to a committee, your aim should be to try to steer the path in the control space around the right-hand side of the cusp-point—in other words, to achieve as much positive action as possible before the reaction sets in because, then, the effect of the reaction will be merely to reinforce and strengthen the committee's decision in your favour. For example, Cornford (1908) points out that, whereas the reason for lobbying your friends is to keep them informed, the reason for lobbying your opponent is to present him (or her) with an opportunity of getting his opposition off his chest over lunch just before the meeting, so that, rather than repeat himself so soon afterwards, he inadvertently lets you steer the path round the corner before realising that he has left his reaction too late. Sometimes, however, in spite of your efforts, you may perceive that the path is inevitably going to pass to the left of the cusp-point, as shown by the dotted line in Figure 13. When you reach the point X, you are faced with a dilemma: should you stop the action at X and, hence, also the reaction and settle for a mildly negative decision against you at X_1? Or should you press on with the action to Y, thereby provoking a more violent reaction and a much stronger negative decision against you at Y_1? It is tempting to choose the former course, but this is a mistake, because if you press on to Y, then, when the action subsides later at Z, the committee will make a surprise reversal of its earlier decision, from Z_1 to Z_2, in your favour, without you having to take any further action. Indeed it may be essential for you *not* to take any further action, and it may even be advisable for you to absent yourself from the committee in order to ensure the necessary subsidence of the reaction. Surprise reversals of this nature were commonplace amongst faculty in meeting student demands in the early 1970s, once the strong reaction against student militancy in the late 1960s had subsided.

These surprise reversals are the key to the resolution of our original paradox between democracy and unreliability, as follows. Let us now reinterpret the normal factor, a, as measuring the democratic value of the policy, and let us suppose that eventually the "action" will tend to this value. Meanwhile, the reaction depends upon the beliefs, preferences, prejudices, and fears of the various members of the committee and, so, may always be oscillating back and forth. Therefore, in the short term the committee may well act unreliably, as illustrated by the path in Figure 13, but in the long term, once the action has approached its democratic value, a, and after, at most, one surprise reversal, the committee will have reached its final decision which will be positive or negative according as $a \gtrless a_0$, and which will correlate in strength with the democratic value. The reason it is final is that future oscillations of the reaction, however violent, cannot change the sign of the decision and can only marginally change its strength. Therefore, in the long run, a committee will prove to be democratic.

Example 9: Ideologies (See Zeeman, 1979)

From committees, we pass to ideologies. The standard everyday model of ideologies is to squash them all down onto a one-dimensional spectrum running from Left to Right, which , at first sight, seems somewhat arbitrary and unreasonably restrictive. In our model we shall represent personal opinions as a cloud of points in a multidimensional space, and we shall argue that this cloud clusters around a cusp-catastrophe surface, S, situated over a two-dimensional parameter space, C, of ideals. The ideologies correspond to various regions of the cloud and, so, can be represented by various regions of S. Since S is horseshoe shaped, we recover not only the everyday one-dimensional spectrum but also explanations of why the left and right wings are, in some aspects, closer to each other than to the centre and why extremists believe in revolution, as opposed to moderates who believe in evolution.

We take as normal factor in C an economic axis running from belief in equality to belief in opportunity. These two ideals lie at the opposite ends of a spectrum because too great an insistence upon equality may lead to egalitarianism and the denial of opportunity to the deserving, while too great an insistence upon opportunity may lead to elitism and the denial of fair shares for all.

We take as splitting factor in C a sociological axis running from belief in individual freedom to belief in centralisation of power. Again, these are opposites because too great an insistence upon freedom may lead to anarchy to the detriment of society, while too great an insistence upon power may lead to repression to the detriment of the individual. The reason for choosing this as a splitting factor is that those who believe in the centralisation of power are liable to be split between those

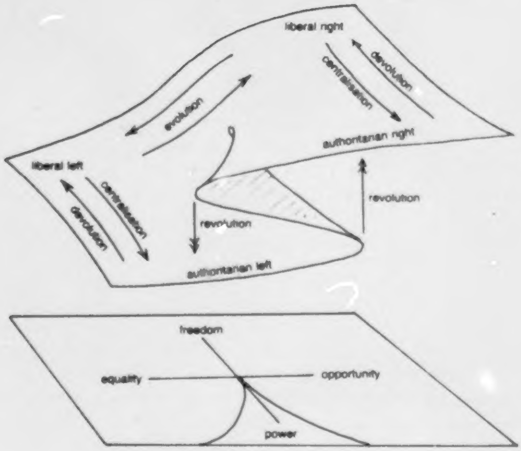

Figure 14. *Cusp-catastrophe model showing how ideologies depend upon an economic normal factor running from belief in equality to belief in opportunity, and a sociological splitting factor running from belief in individual freedom to belief in centralisation of power. The model shows how the left and right wings overlap, and explains why authoritarians believe in revolution while liberals believe in evolution.*

who want that power to be used to promote equality and those who want it to promote opportunity. Therefore, we obtain a cusp-catastrophe surface S as in Figure 14.

Notice that we have not drawn a vertical axis because the opinion space is not one-dimensional but multidimensional. More precisely, the mathematical assumptions behind the model are these:

1. Personal opinions can be represented by points in a highly multidimensional space $C \times X$, each individual being represented by a single point.
2. A suitably designed questionnaire given to a sample of the population being studied will produce a cloud of points in $C \times X$.
3. This cloud can be roughly approximated by a probability distribution P on X, parametrised by C.
4. P is generic. (Most functions are generic.) (See Zeeman, 1977.)
5. P is unimodal (one maximum) for parameter points outside the cusp and bimodal (two local maxima) for parameter points inside the cusp.

Then Thom's classification theorem (Thom, 1972, and Zeeman, 1977) tells us that the modes of P, that is, the points of X where P is maximal, will form a surface S over C, as in Figure 14, irrespective of the dimensionality of X. (The saddle points of P will form the shaded middle sheet which we can ignore because there the cloud is thin.) Going round the surface from "bottom" to "top" recovers the standard spectrum running from left to right. We have also labelled the ideologies as "liberal" or "authoritarian" according to their position on the splitting factor. The left and right wings are close because they overlap over the inside of the cusp.

Each ideology is not only a static collection of opinions, but it also thinks of itself as a dynamic attractor, for recruiting supporters and governments. For example, the liberal left imagines smooth flow lines on S flowing towards itself from its two neighbours: the flow from the liberal right is called evolution and the flow from the authoritarian left is called devolution. Meanwhile, the authoritarian left imagines a smooth flow from the liberal left called centralisation and a catastrophic jump from the authoritarian right called revolution. By symmetry, the same applies to the ideologies on the right. That is why the catastrophic concept of revolution is built permanently into all authoritarian ideologies, while the smoother concept of evolution is built permanently into all liberal ideologies.

The question arises, Is this model scientific? The first answer is that, by combining so many observations on a single universal mathematical model, we have *reduced the arbitrariness of description* which, as Thom points out (Zeeman, 1977, page 637), is the objective of science.

Secondly, it throws a new light on existing experimental evidence (Eysench, 1954, and Zeeman, 1979), and thirdly, it suggests further lines of enquiry and designs of experiment, to determine where the model predicts successfully and where it fails as well as how it might be elaborated or improved.

Example 10: Decision making

Models in the social sciences tend to be more *ad hoc* than those in the physical sciences. This is because a model in physics often possesses a deeper structure based on fundamental principles; and if a catastrophe appears in the model it often occurs as a natural consequence of this deeper structure. By contrast, the social sciences possess fewer fundamental principles, and so in each of the models we have discussed so far in this paper the cusp-catastrophe has appeared as a new hypothesis. Admittedly this hypothesis has been chosen to represent certain observed qualitative properties of the phenomenon under discussion and has, in turn, predicted other qualitative properties, but choosing it as a hypothesis is quite different from a natural occurrence arising as a consequence of some deeper structure. There are some models emerging in the social sciences which possess a deeper structure that gives rise to natural catastrophes, and we choose our last example to illustrate one of these. I am indebted to Jim Smith and Jeff Harrison for most of the ideas behind this example (Smith, Harrison, and Zeeman, to appear).

Bayesian decision making is based on information (or beliefs) and utilities (or preferences). The problem of making a decision is represented by having to choose a point x in some decision space X. *Information* is given by means of a probability distribution P on some space Y of future possibilities, and P may depend on the decision x. *Preferences* are given by a loss function L, where L(x,y) denotes the loss incurred if the decision x is made and the future y subsequently happens. Then the *risk* R of making the decision x is defined by

$$R(x) = \int_Y L(x,y)P(x,y)dy .$$

In other words, for each small future probability P(x,y)dy we punish ourselves with the appropriate loss and then sum over all possibilities. The *Bayesian decision* is defined by choosing the absolute minimum of R.

The surprising point is that a unimodal probability distribution and a unimodal loss function can combine to produce a bimodal risk function. For example, we will show that a normal distribution and its conjugate loss function can produce the type of risk function shown in Figure 15. Here there are two local minima, one at x_1 and the other near 0. For example, x_1 might represent doing something, while 0 represents doing nothing, and since the risk at 0 is smaller than that at x_1 the decision maker will conclude that "the time is not yet ripe" for action (Cornford, 1908). However, if the information and utilities change so that the minimum at x_1 falls below that at 0, then the decision maker will conclude that "the time has ripened" and, so, will switch his or her decision catastrophically from 0 to x_1.*

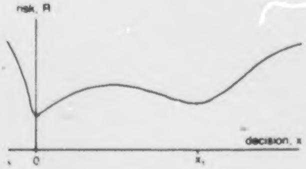

Figure 15. *Graph on which the Bayesian decision is determined by the absolute minimum of the risk function.*

More generally, P and L will depend upon parameters, and the minima of R will form, by the classification theorem (Thom, 1972; Zeeman, 1977), a decision surface, whose singularities over the parameter space will be elementary catastrophes.

From the quantitative point of view, if normal distributions are used, for example, then the variables will be reduced to a few means and variances, rendering the problems of data-fitting and prediction amenable to computation. The decision maker will be able to track his or her time path across S and predict the changes in information and utilities that would cause switches of decision.

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*In this example, the switch occurs at the Maxwell point (Thom, 1972, and Zeeman, 1977), where the two minima are at the same level, rather than at the bifurcation point, where a minimum disappears by coalescing with a maximum, as in all our previous examples.

Different decision makers following divergent paths over the same surface will be able to determine whether this is due to differences in their beliefs or their preferences, and having identified the differences, will be able to better understand each other's points of view.

Let us illustrate the idea by a concrete example. Suppose an institution is planning its budget for some future date, and suppose an administrator has to make a decision about the percentage increase, x, on the present budget. The problem is to allow for inflation which, by that date, will have accumulated some percentage increase, say y. We assume that the decision x will not affect the rate of inflation and so, in this example, P is independent of x. Suppose that, from the information available, the administrator believes that P is a normal distribution with mean μ and variance V:

$$P(x,y) = P(y) = \frac{1}{\sqrt{2\pi V}} \exp \left\{ - \frac{(y-\mu)^2}{2V} \right\}$$

Suppose the administrator's preference is to stay with the inflation; in other words $L = 0$ if $x = y$ and $L > 0$ if $x \neq y$. If $x < y$ the budget will be too low, resulting in financial difficulties, and if $x > y$ the budget will be too high, resulting in a loss of flexibility and perhaps a loss of opportunities. The corresponding conjugate loss function with variance K is

$$L(x,y) = 1 - \exp \left\{ - \frac{(x-y)^2}{2K} \right\}$$

We can now compute the resulting risk function:

$$R(x) = 1 - \sqrt{\frac{K}{K+V}} \exp \left\{ - \frac{(x-\mu)^2}{2(K+V)} \right\}$$

Therefore, if K is constant, the Bayesian decision is given by $x = \mu$. This is not surprising because it is merely the expected inflation.

However, suppose we now introduce a subtlety into the problem by making K depend upon x. For instance, let $K = (a+bx^2)^{-1/2}$, where a,b are positive constants. Then K is a decreasing function of $|x|$, representing a decreasing tolerance of error in the loss function. In other words, the larger the inflation, the smaller the tolerable margin of error; the constant b measures this intolerance. The resulting risk function is illustrated in Figure 15. We can take μ as a control factor: if μ is small, then the Bayesian decision is near 0, and so the administrator will, in effect, use a fixed budget. If μ increases beyond a critical value, then the minimum at x_1 will fall below that at 0, and

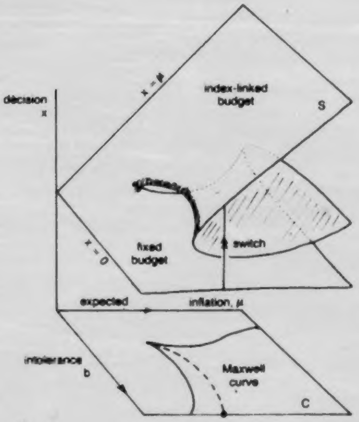

Figure 16. *Model of a cusp-catastrophe arising naturally from a normal probability distribution and a conjugate loss function. The switch of decision, in this case from fixed to index-linked budget or vice versa, occurs when crossing the Maxwell curve (shown dotted).*

so the Bayesian decision will suddenly switch to x_1, near μ; the administrator will accordingly switch to an index-linked budget.

We can regard b as a second control factor, giving rise to a two-dimensional control space C with coordinates (μ,b). Then we can prove that the graph of the minima of R is a cusp-catastrophe S over C, as shown in Figure 16. The back of the graph is single valued and continuous because when b = 0 the decision is $x = \mu$. The front of the graph is bimodal, and the Bayesian decision is the lower minimum. Therefore, catastrophes occur on the Maxwell curve which is defined to be the set of control points for which R has both minima at the same level (shown dashed in Figure 16). Consequently, the administrator will switch decisions whenever the control point crosses the Maxwell curve in either direction. (There is no hysteresis in the choice of lower minimum.) Therefore, the switch from a fixed budget to an index-linked budget can be triggered by increasing μ, or decreasing b, or doing both together. Recent rises in the expected inflation, μ, have indeed triggered this switch in many institutions and pension schemes.

References

Cobb, L. *Parameter estimation for ensembles of nonlinear stochastic systems* (Preprint). Charleston: Medical University of South Carolina, 1979.

Colgan, P.W., Nowell, W., & Stokes, N.W. Spacial aspects of nest defence by pumpkinseed sunfish (*lepomis gibbosus*): stimulus features and an application of applied catastrophe theory, *Animal behaviour.* To appear.

Cornford, F.M. *Microcosmographia academia.* Cambridge: Bowes and Bowes, 1908.

Eysenck, H.J. *Psychology of politics.* London: Routledge and Kegan Paul, 1954.

Friedman, M. & Friedman, R. *Free to choose: A personal statement.* New York: Harcourt Brace Jovanovich, 1980.

Hayek, F.A. *The Times* (Letter). London: 5 March 1980.

Hertzberg, F., Mausner, B. & Snyderman, B. *The motivation to work.* New York: Wiley, 1959.

Hertzberg, F. *Work and the nature of man.* New York: T.Y. Crowell, 1966.

Johnson, F.C. *Catastrophe theory: Applications to institutional research.* Presidential Address, delivered at the Twentieth Annual Forum of the Association for Institutional Research, Atlanta, GA, April, 1980.

Kaldor, N. *The Guardian* (Letter). Manchester: 11 March 1980.

Poston, T. & Stewart, I.N. *Catastrophe theory.* London: Pitman, 1978.

Roberts, J. *The catastrophe of motivation* (Essay). Coventry: University of Warwick, 1972.

Santayana, G. *Persons and places: The middle span.* London: Constable, 1944, p. 8.

Shakespeare, W. *The life and death of Julius Caesar.* 1599, Act IV, Scene 3.

Smith, J.Q., Harrison, P.J. & Zeeman, E.C. The analysis of some discontinuous decision processes. *European J. Op. Res.*, to appear.

Sussmann, H.J. & Zahler, R.S. Catastrophe theory as applied to the social and biological sciences: A critique, *Synthese 37*, 1978, pp. 117–216.

Thom, R. *Structural stability and morphogenesis.* Reading, MA: Benjamin, 1972 (English translation by D.H. Fowler, Reading, MA: Benjamin, 1975).

Thompson, M. *Rubbish theory.* Oxford University Press, 1979.

Zeeman, E.C. The geometry of catastrophe, *The Times Literary Supplement*, 10 December 1971, pp. 1556–7.

Zeeman, E.C. *Catastrophe theory: Selected papers 1972–1977.* Reading, MA: Addison Wesley, 1977.

Zeeman, E.C. A geometrical model of ideologies. In K. Cooke & A.C. Renfrew (Eds.), *Transformations: Mathematical approaches to culture change.* London: Academic Press, 1979, pp. 463–479.

APPLICATIONS OF CATASTROPHE THEORY TO INSTITUTIONAL RESEARCH (presidential address)

F. Craig Johnson
President, The Association for Institutional Research

(Note: The following is an edited transcript of the presidential address delivered at the Tuesday morning general session.)

The theme of our Forum this year asks us all to meet the challenges of the eighties by a redirection of resources for renewal. In keeping with that theme, we each should look at the resources we have for individual professional renewal and see what alternative directions are available to us. Over the past few years, a growing awareness of professional renewal has been expressed by our members at these annual Forums, at our regional meetings, and in our publications. Recent presidential addresses have suggested approaches for us to take to redirect our professional activities. In keeping with this tradition, I ask you to consider, with me, the following proposition: professional renewal for institutional research is well served by using individual human resources within our association to explore, to develop, and to evaluate new research methods. I have selected Catastrophe Theory applications to elaborate this proposition. While it is only one of several new approaches that should be explored, it does provide a suitable example of how our professional renewal can be furthered by looking at old problems under a new light. Two specific examples will be provided to show how catastrophe theory can lead to renewed inquiry.

In order to evaluate a new research method it is necessary to assess the appropriateness of the method for institutional research, to determine the mathematical skill required, and to consider the potential of the method for adding to our conceptual framework through some modeling activities. An evaluation of catastrophe theory has led to the following assessment. If a question is asked in a very practical way, such as, Is this something my boss will be interested in having on his desk Monday morning? then the answer depends, in part, on who the boss is. Some of us work for bosses who are interested in graduate programs in higher education or in educational research. They are very interested in having us advance both the methods and practice of educational research. In fact, *my* boss is so interested in catastrophe theory that he can't wait until our proceedings are printed, and he will hear Professor Zeeman lecture tomorrow night at Florida State. While this is exceptional, it does remind us that at least a part of our profession is currently involved with development of new methods. Setting aside those of us who are teachers, the question of appropriateness remains for the institutional research practitioners whose professional responsibilities require that they think about new and different ways of approaching the problems facing our institutions. I believe that catastrophe theory is one appropriate way to analyze old problems in a new framework. It may be too optimistic to expect that within the next several years we will have tested and proven predictive models for institutional research; it *is* reasonable to expect that such models will be available before the end of the next decade. It is the development which will be important to our field during the ten years to come. The question for each of us, then, is when and at what level we wish to be involved. If you find reward in being in on the beginning of things and are willing to take the aggravation, the frustration, and the uncertainty in return for the enjoyment of watching something new develop, then I invite you to become involved with catastrophe theory. The development is approaching the end of the beginning, but within the next year or so there will be plenty of opportunity for us to help with some of the basic applications. Some of us can encourage doctoral dissertations while others can be active in expositions with our colleagues to increase our awareness of the basic concepts and to stimulate creative thinking about everyday problems.

An estimate of the mathematical skill and background we might need in order to help develop catastrophe theory has been suggested by several authors, and the usual recommendations include a little linear algebra, calculus in several variables, and perhaps some topology. Our experience at Florida State University has been that in the two seminars we have held in catastrophe theory our graduate students have been able to follow the mathematics involved for both the statistical catastrophe analysis and for the mathematical topology of catastrophe. They have been able to read and to follow applications in other fields but have not attempted to do any of the mathematical proofs. The mathematicians I have consulted believe that at this time it is not necessary for us to understand—nor productive for us to challenge—the proofs but rather to accept the mathematics as solid, to try to understand the model, and to make useful applications. I have no doubt that most institutional research practitioners will have little difficulty with the mathematics involved in developing such applications.

Assuming, then, that catastrophe theory is appropriate for institutional researchers and that the mathematical skill required presents no major obstacle, we can begin to think about the theory in terms of its potential contribution to the improvement of our conceptual frameworks. Here we can use catastrophe theory in two ways. The ultimate use is as a predictive model which will show the relationship between observed data and predicted behavior. If that were the only use, the benefits would be remote indeed. Fortunately, there is a second use for the catastrophe model which provides us with a language for thinking about a model that we might eventually develop. It is a very useful language for thinking through our problems, for identifying our variables, for understanding relationships, and for clarifying thought about the essential character of our data. The language is useful because of the solid mathematics which underlies the theory. It is practical because of the available computer programs for evaluating raw data to see whether or not the cusp point can be located, whether or not the data are bimodal, and whether or not the data pass the goodness-of-fit test. Certain computer programs compare the proportion of the variance which is accounted for using the cusp catastrophe analysis with other regression techniques. The language of catastrophe theory, then, is based on solid mathematics and is reinforced by a growing library of computer programs.

The following two examples which I have prepared illustrate how we might apply catastrophe theory language to institutional research. The first example is deductive in that it starts with some actual cost data and is based on our traditional cost model which expresses demand in terms of a combination of student enrollment, section size, faculty salary, and teaching load.

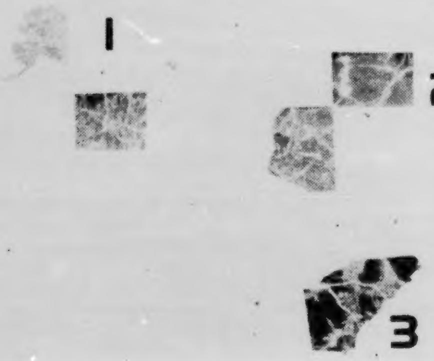

Figure 1. Identification of groups of states for analysis: Group 1 (Alaska, Wyoming, District of Columbia); Group 2 (Arizona, Colorado, New Jersey); Group 3 (Georgia, South Carolina, North Carolina).

Data for this application combines three groups of three states (see Figure 1) and includes the following: their enrollment changes from 1975–1978 as demand factors, their changes in appropriations from 1975–1978 as funding factors, and their per capita tax revenue in 1976 and 1978 as factors of revenues. The first states (Alaska, District of Columbia, and Wyoming) were selected because they are small in population, have a high geographic cost index, and exhibit extreme volatility in rankings of states on several financing factors. The second group (Arizona, Colorado, and New Jersey) exhibits the relatively stable behavior found in most states. The third group (Georgia, North Carolina, and South Carolina) has exhibited some growth and reflect the student enrollment component in the demand model.

Figure 2 shows the condition of these three groups of states in 1975–1976 on the two dimensions of demand and funding. The first group (large number 1) exhibited no growth but had a 30% increase in funding. The second group exhibited a 10% growth and no increase in funding. The third group exhibited a 15% growth and a 15% decline in funding. While these cases were selected for their extreme behaviors, the general rule that the more demand placed on funds the less the proportion of funding applies to all states to some degree. The 1977–78 condition of these three groups of states is reflected on the side wall of Figure 3.

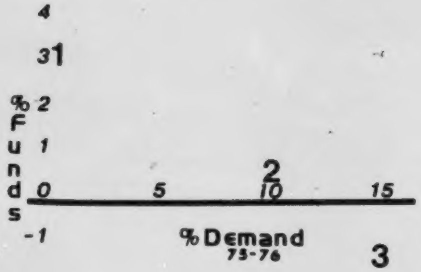

Figure 2. Demand and percent of funds for three groups of states.

This three-dimensional graph shows that all three groups have experienced no growth in the enrollment demand which was typical of the other states at this time. Group 1 shows a 40% revenue increase, Group 2 a 20% increase, and Group 3 a 30% increase. The third dimension shows the revenue picture and reflects a 36% increase for Group 1, a 30% revenue increase for Group 3, and a 13% increase for Group 2. The cost increases were not a function of enrollment demands but rather of some other part of the cost model—perhaps faculty salaries, smaller section sizes, or lighter teaching loads. Whatever the basis for the demand, there was an increase in cost with no enrollment growth. One man's quality improvement is another man's inflation.

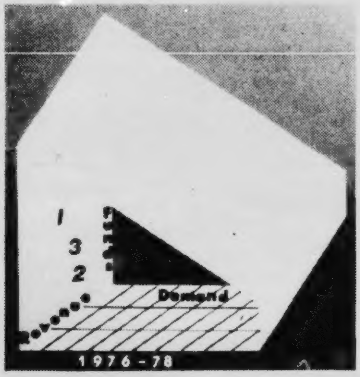

Figure 3. Three-dimensional graph of funds, demands, and revenue for three groups of states.

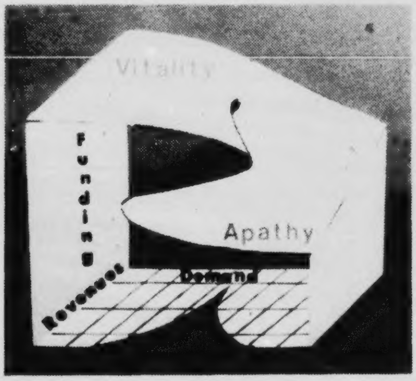

Figure 4. General cusp-catastrophe model.

Let us now look at this in terms of the language of catastrophe theory. The general model in Figure 4 exhibits the cusp which allows us to project the data points for funding levels in terms of the inflated (or quality improved) revenues and the demand. The behavior surface shows institutional vitality and apathy.

In Figure 5, the three institutions find themselves in conditions of no growth and increased funding based upon increased revenues. What does the future hold? Inflation (now nationally at about 20%) produces surpluses in our state and federal governments. State institutions must now begin to make demands based upon that inflation and ask taxpayers to pay out more of their less valuable dollars in the face of a state surplus. The stage is set for a tax revolt which should affect these three groups of states differently as can be seen in Figure 6.

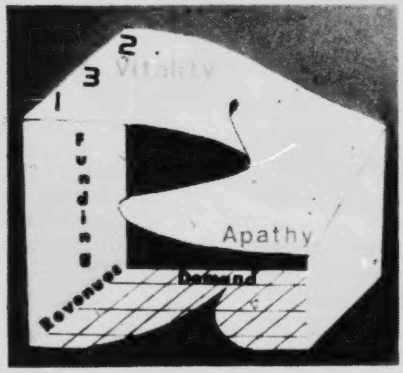

Figure 5. General model applied to three groups of states.

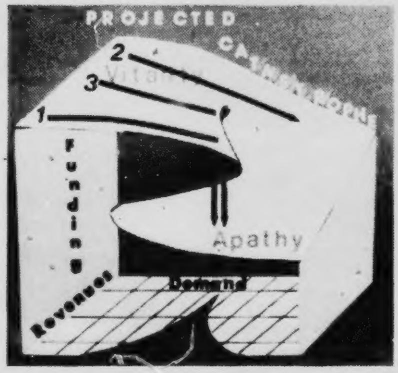

Figure 6. Illustration of catastrophic jump.

The most stable groups of states would experience the same lower percent of funding with greater demand. The other two more volatile groups of states would, in the event of a tax revolt, find a much greater decrease in funding under the same demand conditions. The cusp model suggests that unless the inflation goes away these state institutions must either wait for a counteracting tax reform or make drastic adjustments in their cost model.

We, as an association, are facing the same problem and our adjustments are as painful. Our growth has been about 10% per year, which produced enough revenue to offset a 10% inflation rate. We have been able to maintain a level of funding which produces a vital organization. We now face 20% inflation and, like many states, have a surplus. This afternoon at our business meeting, we will share with you the pain of increasing costs and raising fees in the face of a surplus. Perhaps we can even avoid a catastrophe!

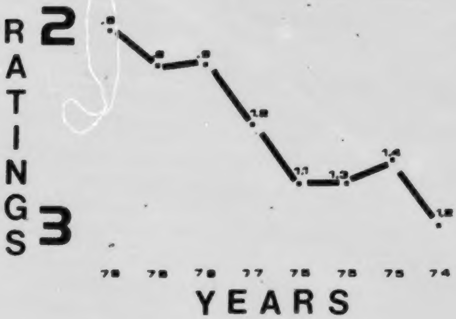

Figure 7. Student rating data for eight sections over eight years.

A second example is inductive and grows out of a personal experience of mine as a faculty member. I have been receiving ratings for my research methods course ever since 1974 and have collected about five years of data on my teaching. As Figure 7 shows, there has been some improvement in my teaching. My mean has gone from 3.1 to 2.0 on a 5-point scale, with some variations depending on the year. The means and standard deviations do not describe the kind of problem that I sense and feel in my class. The ratings I get show that some students are neutral; some, in fact, are relatively pleased; but there is another group which is alienated—they take their black pencil and run it down the low side of the evaluation, disregarding discrimination on the five factors which are built into the instrument; they override differences in course organization, instructor, demands, interaction, student interest, expected grade, and student characteristics. This polarization is not reflected in statistics which assume normal distributions. Consider two curves in Figure 8 which have the same mean and the same standard deviation. They look quite different and can be understood much better by me if I look at some cusp statistics. The two statistics developed for the cusp probability density function show me that a measure of bifurcation (B) and asymmetry (a) will tell me what I want to know about these curves (see Figure 9). "B" is positive and bimodal, "a" is negative for a large mode on the right and negative for a large mode on the left.

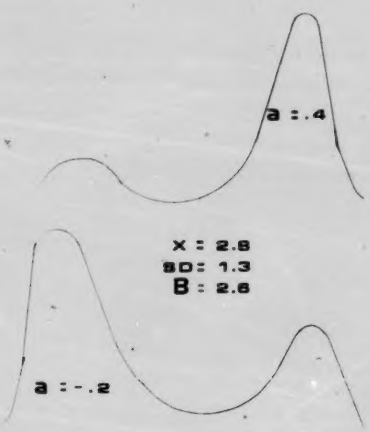

Figure 8. Catastrophe-cusp statistics for student rating data.

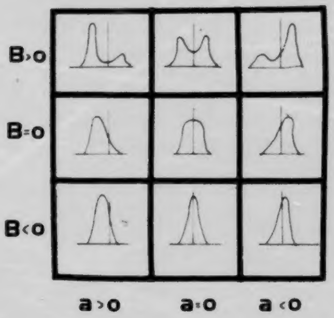

Figure 9. Cusp probability density function.

In Figure 10, we can see how much better a description is made, for my purposes. I believe the first variable is the scientific curiosity of the student. If students are willing to accept the scientific method, then I believe those unimodal ratings at the low end will be eliminated, student motivation will increase, and better performance will result. The second variable—the degree of philosophical doubt a student has—sounds very much like the first. A high level of philosophical doubt cannot be resolved by a better understanding of the scientific method. When students are intensely concerned about the philosophical issues and their scientific curiosity motivates them to try to use the scientific method, then I believe there will not be average ratings but either high or low. Catastrophe theory has enabled the construction of a model for looking at some variables which now need testing. Even if catastrophe theory is not suitable for *testing* the hypothesis, I do have a little better understanding of what may be going on in my classroom. The hypothesis may need to be tested using traditional statistics. These two examples by no means exhaust the applications we might have of catastrophe theory but they have some of the characteristics which relate to the basic assumptions discussed earlier. It seems to me that these applications are appropriate topics for institutional research. If a predictive model can be developed, it would be a useful item to "put on the boss's desk on Monday morning" in any institution. The applications provide a great opportunity for doctoral students to do research and, perhaps, for practitioners to view old problems in a slightly different way. The amount of mathematics involved was minimal. (I have used as consultants mathematicians and statisticians who were more than willing to point out to me my technical mistakes.) The data for the examples have been run through the computer program and have met the basic criteria of catastrophe theory.

Not all data we use are clarified by catastrophe statistics. In preparing this paper, I rejected several ideas that didn't work. In this process, there were several analyses which involved both a regression analysis and catastrophe statistics.

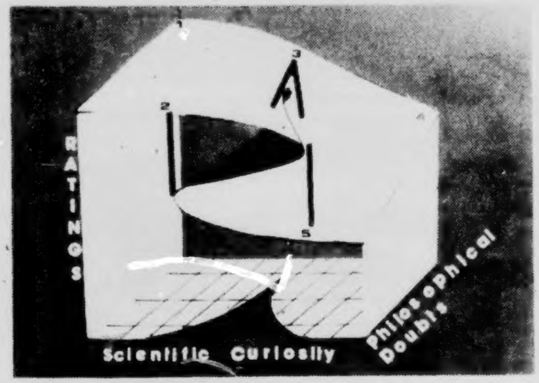

Figure 10. Sudden jump and diversity for student rating data.

In closing, then, I would encourage you to renew your personal resources by looking in more detail at catastrophe theory—if you are interested in beginnings, in having some fun, and in renewing your professional life. Several bibliographies are available, and many people now working on catastrophe theory will be happy to have you join them. When you get back to your home campus, take a mathematician to lunch and see what you can find out. Any professional renewal you decide to pursue will enrich us all and help us to meet the challenges of the eighties. It is time for professional institutional researchers to be more active in developing the tools of their trade.

(Editor's note: An introductory bibliography on catastrophe theory is available from the AIR Executive Office, 314 Stone Building, Florida State University, Tallahassee, Florida 32306.)

MEETING THE CHALLENGES OF THE EIGHTIES (luncheon address)

Elias Blake, Jr.
President, Clark College

(Note: The following is an edited transcript of the address delivered at the Forum luncheon.)

You can always collect data, but its interpretation is critical—sometimes as important as the data itself. To make the point, I will tell you a story about the collection and interpretation of data. There was a new young Mafia godfather who had just come into control of all of the rackets along the East Coast of the United States. He was of a younger generation, and so he decided he needed a new breed of accountant to put the rackets on a modern management footing. As you know, the Mafia does a lot of things which it is not interested in having widely disseminated, so the godfather searched and was able to find a *deaf-mute* MBA-CPA. Then he sent one of his top contract soldiers to school to learn sign language so that he could interpret. This arrangement went well for a number of years, but then one night the Mafia chieftain was looking through his books, using his handy little calculator, and he couldn't find about a quarter of a million dollars! He sent for his MBA-CPA and he also sent for his interpreter. He told the interpreter to ask the MBA-CPA where the money was. The MBA-CPA answered that he had no idea and that there must be some mistake. The Mafia chieftain told the interpreter to ask the MBA-CPA again, "Where is the money," and again the MBA-CPA answered, "I don't know." Then the chieftain went to the wall safe, opened it, pulled out the biggest gun that anyone has ever seen, and held it to the MBA-CPA's head. Then he told the interpreter, "Tell the MBA-CPA that if he doesn't tell me where the money is, I am going to put his brains all over this table cloth." The MBA-CPA then told the interpreter in sign language, "In a moment of great weakness, under the pressure of handling so much money, I *did* take a quarter of a million dollars, and it is downstairs in the basement, behind the furnace, in a plastic bag, under the water in the hot water heater." The interpreter turned to the Mafia chieftain and said, "He said, 'I got the quarter of a million dollars; I ain't giving it back; pull the trigger if you're brave enough.' "

So you see, it's a matter of the data *and* the interpretation, and those to whom you interpret data in this coming period can survive or they can "get killed." Whatever interpretation you give, they are likely to be badly hurt by some of the things that are to come. As in the story, even if the Mafia chief had been given the correct interpretation, it is likely that the MBA-CPA would have been hurt anyway. I think that is also the nature of the period into which we are moving in American higher education.

The rise of quantitative research in the social sciences and of computers, I think you would say, parallels the development of institutional research as a profession. It also parallels the attempt by the social sciences and other related disciplines to use quantitative methods to help us make better public policy decisions. There is, of course, a division of the house as to how good these things are and some question as to whether, in fact, they *are* improving our ability to make decisions, but nevertheless, they are part of a "going concern." In higher education, as we got larger and larger systems, both in terms of individual institutions and of state systems which are very complex, these quantitative methods began to develop by leaps and bounds. As we moved into the last decade, American higher education was being asked to use modern techniques, to use some of the models from American business practice in its own management, to use data base planning for managing and for evaluating its efforts—in other words, to become more businesslike. I've had some second thoughts in the last two or three years, though, about American higher education becoming more businesslike, particularly as I have watched the automobile industry: it seems that some of their data base planning didn't tell them when to make cars smaller and to increase mileage, and they didn't read properly the significance of people buying all those Volkswagens, Datsuns, and Toyotas. Although we may wonder what business we are supposed to be more like, those pressures are not going to abate.

In this era, some things work better than others, and the problems of interpretation are more intense in some areas than in others. Decisions in education, however, are so heavily people oriented that even the best of data and the best of interpretations do not always ease the decision maker's role. Let me review some areas of activity with which you are familiar. The analysis of enrollment—projecting what it's going to be in the future—is a major growth industry in American higher education research for reasons which I will detail later. Finances—quantitative methods of looking at the finances of institutions—is another growth area. I received one of my greatest shocks, after becoming president of Clark College, when I got my first information from the Methodist church (we're a church-related college) related to their future support of the college.

Lo and behold, there were about seven pages of quantitative indices—such things as the ratio between my debt service and my unrestricted revenue and the percentage of E&G expenditures in instruction versus administration—and I said, "My Lord—the church—I thought at least *they'd* ask me a *different* series of questions," but they, too, were in this business of using quantitative analysis. Another area of concern involves personnel systems, with the new issues of tenure, tenure tracks, how people are going to be utilized, internal dislocations, faculty being in the wrong places—and what do you do about it? Then there is the whole question of facilities—facility utilization and scheduling. All of these things are very familiar, but the point that I want to make is that there are *people* in those boxes—and those are people that you're counting in the numbers. They have motivations, perceptions, anxieties, and vested interests. The decision makers have the numbers; they look at them; but their job is not made any easier.

I want to look further at just one of these areas—enrollment and demographics—which is of great concern. We are receiving estimates that anywhere from 15–25% of the traditional college-age cohort will drop off between now and the early 1990s, with there being general agreement that there *are* going to be substantial drops. Also, there is a sense that the Northeast and the Midwest are going to be hit the hardest by these drop offs—predictions are closer to the twenty or twenty-five percent range—with the Southeast and Southwest not being hit as hard and *some* states within those regions not really getting any very sharp drop-off in their college-age populations. There is also a lot of discussion about the possible growth of the older population—those beyond the 18–22-year-olds—which is enrolling in higher education. This new population, however, has not traditionally been in the four-year sector of American higher education but has so far been enrolling primarily in two-year colleges and other kinds of institutions. So there is also the generalization that the four-year sector may be hit harder than some other sectors of American higher education.

There are some other factors, not commented on enough in these scenarios for the future, which I will comment on now. For example, the patterns of minority population growth and development will be sharply different. Black enrollment is not going to drop off at those particular rates, nor is enrollment of Hispanics. A great many even conservative predictions suggest that blacks, rather than being 10–11% of the college-going cohort, will make up 14–16%, and there are some other estimates which suggest that Hispanics are going to represent 12–14%. So we find a new kind of reality where these two groups could make up as much as 30% of the college-going cohort. Furthermore, if older students comprise 10–15% of this cohort, as is estimated, then 40–45% of the higher education population will be new and different kinds of people who have previously participated very little in American higher education, particularly in the four-year sector. In this scenario, then, the drop-off might be mitigated if large numbers of these kinds of populations come into the system. Such an occurrence might very well protect some personnel; it might very well protect facility capacity and give us a higher education system not subjected as much to retrenchment.

One potential problem is that our professional work force, which is heavily male and heavily white, is used to dealing with the traditional populations, but these new pools are substantially different from the current ones. One wonders what kinds of dislocations will occur even if American higher education begins to try to serve this substantially different population. If it is also true that these groups, blacks and Hispanics particularly, will continue to be disproportionately enrolled in two-year colleges—and I think these colleges are going to fight to keep them there since, like others with vested interests, no one in American higher education gives up anything easily—then what kinds of mutually beneficial relationships will need to be developed between two-year colleges and four-year colleges? What impact will these new scenarios have on American higher education? Some new kinds of questions might arise: would, for example, graduate and professional schools, at some point, develop some procedure for pulling people out of two-year colleges and into four-year colleges, with some guarantee for the student of admission into graduate and professional schools? Are people beginning to think about how many doctors, lawyers, engineers or MBAs we are going to get out of the populations which traditionally enter two-year colleges? Now, maybe you operate in different circles than I do, but I believe this kind of national dialogue has not even started yet. The people that the four-year colleges talk about are, in fact, already enrolled in very large numbers in American higher education; the average age in most two-year colleges is in the mid- to upper twenties. There are a few, big city, four-year colleges in which the same pattern is true, but these people are not enrolled in what I call the "modal establishment" in American higher education.

So how does one talk about getting these populations from where they are into a pattern where they can be served? What I am building up to is a model for the future in which we try to develop a better match between the unfinished business of equal educational opportunity and the new pressures of retrenchment that are going to develop and, also, try to avoid, in the short term, a clash between the modal establishment and the equal opportunity sectors. Such a clash is already building in the student financial aid area. In the last two years, there have been major changes in that legislation which focus on middle-income student assistance, as compared to the earlier acts which focused primarily on some definition of low income. Unfortunately, there is only *one* student assistance act, and what this legislation did was to put a whole new population of middle-income students into the same title, change the income distributions, and set up competition between middle-income groups and low-income groups for an expanding pool of financial aid resources. The question is whether the resources will expand fast enough to deal with the inflationary pressures on middle-income families as well as to maintain the educational momentum of low-income groups like Hispanics. I guess the point I'm making is that *you* have a stake in that pool expanding rapidly enough to serve both groups. The scenario of serving essentially unserved groups in American higher education will not happen if there are not financial aid programs to support their enrollment in institutions where the enrollment may, otherwise, drop off by ten, fifteen, twenty, twenty-five, or thirty percent in the next ten to fifteen years. But I don't hear a dialogue about this; in fact, the champions of continuing to expand the pool for basically low-income students are far and in-between, and those of us who have been fighting this battle for a couple of decades are feeling more and more lonesome because the vested interests are saying, essentially, "We have pressures of our own; therefore, we have to get some relief, and if the other people can maintain themselves while we get relief, so be it." No one is saying, "We are all in this together and we all have to go forward together."

Another sign of the struggle that is shaping up, in the short term, is apparent within states where, because of the drop-off in enrollments and the increasing pressures in the private sector, private colleges are competing more and more for public funds. In most states, the private colleges have been successful in getting some kind of capitation or tuition equalization funding for themselves—a few hundred dollars per student or, as in the case of South Carolina, over a thousand dollars. But the private colleges are under a great deal of pressure which will increase as the enrollment drop-off continues, and as the inflationary cycle continues they will come under still greater pressures and will want more pools of students for themselves. They, therefore, should also be interested in how large the pool of financial aid is going to be at the federal and state levels.

So what are the implications of all of this? I'm suggesting that we need to begin to look beyond the conventional work of institutional research and to think about creative models for an equitable system of American higher education with the capacity in the late eighties and nineties to be an engineer of major and dramatic social change. The capacity will be there. The unfinished business will be there. The question is whether the match will be there. The relationship between education and social change has always been there. If you think back, for example, to the period between 1960 and 1968, when Martin Luther King was assassinated, you will see very clearly that the new populations that began to move into American higher education flowed in on the wings of a very large activist movement for social change in American life, as American higher education began to respond to these new kinds of pressures. Yes, the relationship has been there, but because much of the progress has now begun to stall, more articulation on this subject—seemingly one of the best kept secrets in American higher education—by people outside of the majority community is needed. Essentially, the equal opportunity business for black Americans has run into a stone wall. Look at any statistics—medical school statistics have leveled off and the percentages are dropping; law school statistics have leveled off and the percentages are dropping; graduate schools and arts and sciences statistics have leveled off and, for about five years now, have been going in a straight line. For blacks, there are no more lines which are going up. A year ago, even, the total enrollment for black Americans dropped by about a percentage point and one-half for the first time in about twelve years. So I'm saying that there is a stalling here, and if the stall continues and no one pays attention, then American higher education may look around when it needs this movement to keep going and find that it's not there. Then the dislocations will set in and be a lot more painful than they ought to be, and the society will have missed an opportunity to get some unfinished business done.

One specific suggestion for institutional research, as a profession, is to organize to make certain that there is greater participation of minorities in the profession and in the other research professions related to education. If one looks at the federal level or the state level, or even on large local institutional campuses, there still is *very* little minority participation in the key places where research supports policy decisions. Who does the staff work for policy decisions in American higher education and what is the racial composition of the work force—whether in the central office of the state system, whether in a congressional committee office in Washington, or whether in a legislative committee office at the state level? The answer to that question is, generally, that it is almost completely a white, male kind of establishment. More and more blacks are moving into decision-making positions in state government, in federal government, and on institutional campuses, but in terms of the backup people who lay out the options—who, in a sense, give the sign-language transmission to the decision maker—blacks don't have very much participation. So I think this is something on which the institutional research profession can work very hard.

Another specific research area has to do with the flow from below, that is, the patterns moving through the high schools and the implications of those patterns for minority, low-income groups in terms of the size of the pool of young people going to college. If the dropout rates are too high in these groups, then the kind of scenario that I talked about cannot develop. If students never graduate from high school, they can never be accessible to the colleges. The profession has a stake there.

Finally, I would like to mention to you the need to develop research that suggests alternative uses for financial resources rather than retrenchment. Many people in state legislatures are already beginning to tool up their analyses, assuming that there will be a drop-off in students and figuring out how they're going to decrease the dollars that are going to higher education so those dollars can be shifted into other sectors. We need to begin now to lay out models which suggest that these resources can be held in education and that education can become a source of change or a source of protection in the American society. You don't hear much commentary outside of the minority communities about the fact that if you skimp on our resources in education, if you do not put extraordinary resources into education, you pay for it in other kinds of social services: prisons, for example; welfare costs, for example. The public sector is going to pay; the only question is from which pool the dollars will come. We need to be able to show that education—a richness of resources in education—may help us to hold the line on some of these other kinds of social costs. Maybe people will begin to listen to us when they realize that we're talking dollars and cents. I am suggesting that it is in the enlightened self-interest of American higher education to begin to tool up to show how it can help outside groups, helping itself in the process.

This would have long-term implications, I think, for the American society and would also have long-term implications for the way the society makes its way in the broader world that Americans find increasingly difficult to understand—I'm thinking now about the fast-moving events in places like Iran, in places like Southern Africa, and the Middle East outside of Iran. Many of us find it very difficult to understand "how all of this could have happened, how we find ourselves in this sorry state." I think that we never understood the nature of the world that we lived in because we were not paying close attention, and I think there are analogues to that in terms of the domestic life of the society. Up until fifteen or twenty years ago, no one paid much attention to what black Americans *really* were in the American society or what their presence really meant or what the implications were of the way in which they had been treated for decade after decade after decade. Then, when Detroit, and Watts, and New York, and all of these cities were inflamed, the leadership of the country asked the same questions we are asking now about American foreign policy. What happened? How did we get into this situation? What I am saying is that we have not, as a country, paid attention to the nature of the world that is now changing. Just as black Americans said that they wanted to be equal partners, inside this society, these countries are saying that they want to be equal partners on this planet, that they deserve to be treated as equals and to govern their own affairs, out from under control of other people, and in a sense, they're moving to try to do that. If we look at it in that way, then we will recognize that this is a stage that we'll get through if we understand what is happening—we'll be all right and we'll be a stronger country afterwards.

The unfinished business of education, then, is symptomatic of the unfinished business on the planet, and bringing Hispanics, blacks, and other low-income groups into the mainstream from which they have been excluded has an analogue of bringing these third world, underdeveloped countries into the mainstream of economic and socio-political development on this planet. There is a strong relationship between solving these problems for ourselves and solving these problems as a nation. If we're doing well domestically, I think we will do well internationally. I have outlined a set of opportunities for leadership in American higher education. Your profession, as a profession which deals in facts and figures, needs to begin to think about what kind of system of American higher education your facts and figures can present to those who have to make decisions. Let us raise our vision to what I call the match between the unfinished business of equal educational opportunity and the coming potential retrenchment in American higher education and see if we cannot develop some models where American higher education would be seen as an engineer of major social change and development in American society. In turn, it would be supported by the society rather than being looked at askance. Higher education is a very expensive enterprise, and all that it does for America is not always clear. *You* have the ability to make it clear, but you cannot make it clear unless you begin to look at the implications of coming issues of the late eighties and nineties.

What I am saying, essentially, is that the American society, as it looks at education, is something like that Mafia chieftain. It is getting ready, I think, to put a gun to the head of American higher education. You, as interpretors, can give the right message, lay out the right figures, lay out the right trends. If you do that, I think that people will see that, rather than doing damage to this enterprise, they need to support it not only in the way that they are doing now but to support it with even more resources—because it has the potential to solve some of American society's major unfinished social problems.

HIGHER EDUCATION AND THE ENVIRONMENT OF THE EIGHTIES
(panel discussion and reaction)

PART I: PANEL OF STATE OFFICIALS

DAVID M. MORGAN (moderator), Staff Director, Governor's Committee on Postsecondary Education, Georgia
ROBERT H. BELL, Secretary, Higher Education Committee, Georgia State Senate
ARTHUR M. GIGNILLIAT, Chairman, University System of Georgia Committee, Georgia House of Representatives
NELLIE HOENES, Director, Education Development Division, Office of Planning and Budget, State of Georgia
LAMAR R. PLUNKETT, Vice Chairman and Chairman-Elect, Board of Regents, State University System of Georgia

PART II: PANEL OF REACTORS

ROBERT A. WALLHAUS (moderator), Deputy Director for Academic and Health Affairs, Illinois Board of Higher Education
ELWIN F. CAMMACK, Associate Vice President, University of Wisconsin System
JOE L. SAUPE, University Director of Institutional Research, University of Missouri
JOSEPH T. SUTTON, Vice President for Planning and Operations, University of Alabama

(Note: The following is an edited transcript of the discussion held on Thursday morning.)

PART I: PANEL OF STATE OFFICIALS

Morgan: This panel developed from a suggestion that institutional researchers, who have spent a great deal of time looking at their own institutions, might like to have some additional insight into what the state-level people are thinking about some of the major issues. The reallocation of resources that will be taking place in the eighties will be largely influenced by the perceptions of people such as these on this panel, and although they are from the state of Georgia, we feel that their ideas and opinions may very well reflect those in a large number of other states. The four basic areas that we will be discussing are (1) the purpose of higher education, (2) accountability, (3) financing, and (4) communication. I would like to introduce our four panelists at this time.

Bob Bell has served twelve years in our legislature and has been on the higher education committee in both houses. He is currently the secretary of the Senate Higher Education Committee and also serves on the Judiciary and Community Affairs committees. During this past session, Senator Bell led a fight for increased wages for teachers, faculty members, and state employees.

Arthur Gignilliat has been in the legislature for fifteen years. He is the son of a college president and is the chairman of the University System of Georgia Committee in the House of Representatives (which is the higher education committee) and is also a member of the Appropriations Committee.

Nellie Hoenes is the director of the Educational Development Division of the State Office of Planning and Budget which has the responsibility for putting forward to the governor both policy and budget recommendations for all levels of education in the state, kindergarten through postsecondary.

Lamar Plunkett is a successful businessman who served ten years in the Georgia legislature, including six years as chairman of the Senate Appropriations Committee. He is currently vice chairman and chairman-elect of the Board of Regents of the University System of Georgia which has governing responsibility for virtually all public higher education in the state. Mr. Plunkett is also chairman of the Executive Committee of the Board of Trustees of Mercer University, one of Georgia's largest private institutions. He has served on the 1202 Commission in the state and has served fourteen years in the Southern Regional Education Board where he is currently on the Executive Committee.

I'd like to begin, then, by asking Mr. Plunkett what he sees as the basic purposes of higher education; whether those purposes have changed any in the past few years; and whether it seems likely that they will change in the next few years?

Plunkett: I would say that those basic purposes are learning and the advancement of learning. This is achieved through various avenues and echelons: the arts and sciences or general programs, the vocational programs, the community-related programs, the research programs, and the professional programs. There are also purposes that involve the individual personally—for example, development of the ability to make rational judgments and to communicate rationally with peers.

Morgan: Representative Gignilliat, do you have anything to add? From your perspective as a legislator, do you see any need for changing the purposes of higher education?

Gignilliat: We have mentioned education and research. I would add a third side to the triangle of higher education purposes: service. The academic side is what most legislators see or hear about; and sometimes we hear critical comments about research, as when student groups or families question payment of higher salaries for research while graduates do the teaching; but I think that the three strong points of any higher education facility (even, to an extent, the junior college) are education, research, and service. One example of major service that we provide in Georgia, a state that is shifting from an agricultural to an industrial base, is the Cooperative Extension Service which is an arm of the University of Georgia and which provides activities in every county. Many people don't see this as a higher educational responsibility, but I believe it is, that we are combining the best in research with applications. We have also started some small business development centers that are structured similarly. So, I would say that the three-fold purposes of higher education are formal education, research, and service.

Morgan: Senator Bell, do you see the purposes of higher education changing any, or are things going to continue to be much as they have been?

Bell: I feel pretty confident in saying that things will not be the same in the future as they have been in the past—we are in a world in transition. I am not sure that the purposes of higher education have ever been truly defined, other than in the broad areas that have just been laid out for us here. Certainly, it is the intent of the general public "to expand learning"—it is in the determination of what this means and how it will be implemented that we run into problems. We in the state of Georgia—and in the whole world—are moving from an agricultural economic base to an industrial one. This puts strains and demands on our education system from kindergarten all the way through. Philosophically, I think we're moving from "I don't know where we've been" to "I don't know where we're going."

Most of the changes, at least in the recent past, have begun on the college campuses. The professors, as they have worked with students and passed their philosophies on to them, have created an atmosphere where changes can take place; and changes have come as the students have gone out "into the world" to begin living by what they were taught and to start developing their own philosophies.

A group of prospective teachers at the University of Georgia, in response to a question from me asking what they expected of the legislature, responded that they expected an environment in which they could teach in somewhat unmolested freedom; they expected us to fund them at a level where they could live adequately; and they expected us to provide facilities for them. Then I asked these students if they had thought about what we could expect of *them*. I don't think we have turned our children over to them for the purposes of experimental philosophy, of telling them that democracy and the free enterprise system have run their course. I don't think the Regents expect that and, frankly, I don't think the professors are doing it, but I do think it's an area that should be discussed.

Morgan: Mrs. Hoenes, what do you believe the role of the state *should* be in determining the purposes of higher education—assuming that there should be some relationship between the purposes of higher education and those of the state—and how should the state be involved in those purposes we have discussed?

Hoenes: The purpose of higher education, as has already been mentioned, is to help individual students to learn, to grow, and to become better *individuals*. The state is concerned about the state, as a whole, having a higher quality of life and functioning as a *society*. I think it is important to have the higher education professionals and the state working together toward some mutual goals; higher education should not promote learning purely for the sake of learning but as a means to better our society. Often in the past, the society has been bettered primarily because education professionals, with their own social consciences and an identity with the issues, have made sure those issues were addressed. Perhaps the society would be better served if the state and higher education worked together to meet the needs and goals of each in a more structured way. I am not advocating that the state have total control over an academic process but that, in terms of the overall goal of improving the lives of the citizens of the state, we should work together.

Plunkett: Referring back to the question of changing purposes, I think that the purposes that existed at the establishment of Cambridge, Oxford, Harvard, Brown, and other universities are basically the same purposes that exist today. I think they will continue to be the same, but the formats, methods, and channels of distribution will vary.

Regarding the state's relationship to higher education, I see their purposes, in many cases, as congruent. The health of the populace, for example, is a major concern both to the state and to higher education. The training of professionals—in education, business, or vocationally oriented fields, for example—is another area where the state and higher education have congruent purposes.

Education for education's sake—helping students to be better informed, helping them to live their lives with a better understanding of the world around them—is a goal to which the state aspires, also. There needs to be total communication between the two, and the state needs to show concern and a willingness to respond to the needs and problems of higher education. The state's role in performance is another matter.

Gignilliat: The greatest change that I've seen in the fifteen years I've been involved as a member of the higher education/university system committee is the much greater emphasis on placing vocational and technical education within the existing framework on the campuses of our institutions of higher education rather than isolating it somewhere between high school and college, in some cast-off building, as a place where somebody who "can't quite cut it" academically has to be. I think legislators look at it, to an extent, from the standpoint of "pay back" or "return-on-investment" of state resources and improvement of the employment picture. Employability, then, is another purpose we haven't specified; this needs to be one of the end results of education. I think that more and more people are realizing that, nowadays, our job market is much more open to technically qualified people than to those with just a liberal arts education, and frankly, I think that this aspect of education has greater legislative support than some of the more established areas.

Bell: One challenge that you (institutional researchers) and your institutions face regards how you respond to the contrast between your definition of the purposes of higher education and that of the legislature—because the legislature ultimately has, if not unlimited powers, certainly broad powers. In Georgia, we have an "insulated" higher education program which came as a result of earlier interference by the politicians in the university system. The Board of Regents is constitutionally protected from the General Assembly; the General Assembly appropriates funds, but the Board sets the policies and courses and, through the chancellor, operates the university system. But that *could* be changed, and the challenge you face is to find the way to maintain your independence but, at the same time, recognize the reality that the legislature can pass laws and can amend the constitution, with ratification by the people.

There are some people who don't want any change in the institution's approach to education, the teaching or the purposes. So you stand with one hand back with these people, but the other has to reach out to those who fund your programs. We don't have unlimited funds; we never have had them; and we'll have less in the foreseeable future than we have had. As a practical matter, I think that if you deal with this challenge successfully, you'll maintain your independence; if you don't, then I think your independence is going to be challenged.

Plunkett: When we speak of our situation in Georgia, we think we are mirroring some of the thoughts that you have in your state. But how do we harness the will of the people to the government—to the elected representatives, to the governor, to other elected and constitutional officials—to ensure that it properly carries out their demands, wishes, ideals, and ideas? We, here, made the decision some time ago to harness it through very high-level boards—a Board of Education for elementary, secondary, and vocational, and a Board of Regents for higher education. The Board of Regents' jurisdiction encompasses thirty-three institutions whose purposes are specified in the state constitution. The fifteen members of the Board (one from each congressional district and five at large) have the responsibility for carrying out these high purposes—policy making and performance operation are up to them. The people of Georgia are very positive in their yearning for higher education for their young. The state legislature and governor, too, are blessed with fine feeling and concern. We on the Board of Regents are given lump-sum appropriations that we allocate with regard to the concern that has been voiced by these groups. We must recognize the high ideals that the legislators have, must keep them well informed, must communicate, and must listen to be sure that the desires of the people, by whom they were elected, get through to us.

Morgan: Senator Bell has spoken of a fine line that higher education representatives must toe. Mr. Plunkett has spoken of harnessing the will of the people. Both of these lead us into the area of accountability, one of the major concerns that is now affecting higher education. Mrs. Hoenes, what does accountability mean to you?

Hoenes: That is always a tough question to address because "accountability" is a kind of dirty word around state capitols, with various interest groups promoting the concept and others, who are unenthusiastic about being held accountable, opposing it. I think that part of the problem is that the concept, which has all kinds of textbook definitions, is not totally understood even though accountability is being sought not just in higher education but also in elementary and secondary education and in our state agencies. In order to answer the question, Did we get the results we wanted? we first must know what those desired results were. To use a down-home analogy, it is somewhat like the little boy who goes fishing. His mother will be satisfied only if he brings home catfish, but he doesn't know this. So, he baits his hook and drops it into the water, but when he pulls up a nice big flat bream, he is not sure whether he has what he needs. He cannot be held accountable if he doesn't know the objective. It is perceived that those of us involved in the budgetary process, on the governor's or general assembly's level, want you to, at least, get your bait back when you pull up your hook; but in fact, we would rather see you pull up the *right* kind of fish. We must first know what kind that is.

Gignilliat: To a great extent, we legislators in Georgia have delegated our responsibility in this accountability area to the Board of Regents. We expect that they, through their professional administration, are doing what we want to see done, but we also know that if they *were* doing exactly what we want to see done in our institutions, there would not be as much discussion about education as there is in the halls of the legislature.

Our primary emphasis in Georgia, particularly in the last ten years, has been in two areas: salaries and capital outlay for construction. One is fairly easy to account for; the other is a little more difficult. We have done very little research in enrichment areas, but I'm hoping that a more stable enrollment picture will enable the Regents and the General Assembly to regroup the resources to try to emphasize specific areas of excellence in each of our institutions and to develop a better yardstick for accountability.

Peer recognition offers some degree of accountability, but really, in our system, accountability comes through the Board of Regents which administers, to the General Assembly which appropriates the funds, to the public which pays the bill. I have heard it said that when advertising, 50% of your budget is wasted, but you don't know which 50%. I hope that is not the case in higher education, but getting a handle on accountability is a very difficult thing.

Plunkett: There are several ways to approach the question of accountability. First, performance auditing—that is, determining whether those things for which money is appropriated are actually being performed—is very crucial, in my opinion. Second, the performance of graduates in the market place is the best measure of accountability that I know. The audit of funds is related to this, and every exception by the auditor should be carefully scrutinized by all parties having anything to do with appropriations. And finally, we should conduct constant manpower study and review to determine the needs to be met through our educational institutions.

Morgan: Let us now move into the funding/financing area. Mrs. Hoenes, you have great responsibility in this area, and I'm wondering, tying this back to accountability, whether you believe there should be some relationship between accountability and the funding process.

Hoenes: Yes, I do think there should be some relationship, not so much in terms of a threat to cut off funds if performance is not at exactly a certain level but in terms of the need for objectives mutually agreed upon by the state, the educational institutions, and their governing bodies. I think there can be a better understanding, when funds are given initially, of their intended use. Perhaps we should even try the positive approach of determining what critical issues in the state need most to be addressed and making sure that those receive adequate funding.

We in Georgia are studying the effect that stabilization of enrollment may have on our enrollment-driven formula for funding higher education. As enrollment stabilizes, we will not be able to continue to fund just on that basis because we will not be able to keep up with inflation if we do. We may need to relate those costs that are a function of the number of people served to certain fixed and constant costs. In any case, we have been alerted to the fact that we need to look anew at how we are funding higher education.

Morgan: Representative Gignilliat, Mrs. Hoenes indicates that she does not believe the current formula will take us through the next decade without some alterations. I'm wondering if you agree with that and whether you have some ideas on what funding might be tied to if not tied to enrollment.

Gignilliat: The problem is illustrated by the fact that Georgia's enrollment-based funding formula failed this year. The system was faced with an approximate $18 million deficit, $14 million of which had to be made up through tuition increases. Following a peak in 1975, there had been a gradual decline in enrollment at the same time that inflationary pressures turned the expense curve upward. I do not know what the answer is, but there will have to be factors considered in addition to enrollment.

But bear in mind that although enrollment is the basic factor through which the *entire system* receives funds, it is not necessarily the most important component through which *individual units* receive their allocations. Some of our institutions are still growing at eight, ten, twelve percent a year, but they are the exception. Some of our schools, located away from the metropolitan areas, are feeling the enrollment decline very sharply. I support wholeheartedly the concept of the geographical spread of our junior colleges—we've brought at least two years of college education within commuting distance of 95% of Georgia's citizens and, therefore, have enrolled many first-generation students—but I do think that a policy decision is going to have to be made regarding the minimum level of enrollment at which a college can be operated as a separate institution (one alternative being to make it an off-campus branch of another institution). Georgia's a very large state, and I think it's important to have institutions in many different areas; this must be considered in any new funding concept. Whatever that concept, it's going to have to be more broadly based than just enrollment.

Bell: In the area of funding, one of the new problems in Georgia resulted from the way we used the state surplus which developed as a result of inflation and conservative budgeting—we tied it to construction projects on a pay-as-you-go basis. As a result, our construction program was determined by the amount of our surplus. I believe we should focus attention on a funding formula based on bonds rather than surplus; our priorities should be determined *not* by surplus but by need; future generations should pay for buildings as we are paying for buildings built in the past.

On another matter, I want to comment that a newly elected legislator is expected to be an instant expert whose vote carries the same weight as that of a better informed colleague. I urge that each of you (institutional researchers) go back to your institution and see what *you're* doing to educate your legislature on the problems faced by your institution, your university system, or your state. You need to talk about getting your legislators into a seminar in which you can focus their total attention on one subject. (In Georgia, that subject ought to be the funding problem I mentioned.) You need to talk to your legislators—most of us are part-time legislators with limited amounts of time, staff, and information available to us. You could do your own general assembly and state a real favor, if you'd do it.

Plunkett: Going back to the question of the relationship between accountability and the funding process, I think that, yes, there is a relationship. In our state, the governor is the *advocate* of the budget and here priority decisions are made. The budget travels a tortuous route to the General Assembly but, before that, as it comes from departments (including the Board of Regents) it should be winnowed according to the accountability.

Senator Bell commented on the crux regarding our building programs. As he said, we have been on a pay-as-you-go basis for several years, but we must now begin to fund these programs in echelons, as we go along.

Finally, I want to comment that many dollars that used to flow to education are now flowing into other areas, and so, although the total dollars for education will probably increase, education's share of the total pie probably will not.

Morgan: We have touched on our last area, communication. Senator Bell has given our audience a charge in that regard, and I would like for the panel to expand on that a bit. Mrs. Hoenes, is the information related to higher education that you receive generated through the institution or at the state level? Is it adequate for your needs, and if not, what about it is not appropriate or adequate?

Hoenes: I do not feel that our agency has adequate information about higher education in the state. That does not necessarily mean that the information does not exist; it may simply mean that it is fragmented, has not been put together so that it can be used meaningfully. The Governor's Committee on Postsecondary Education is one vehicle for channeling and coordinating that information. I think it is important that we also look at data from the private sector to help us predict what its impact will be on the public sector.

There is one other point that I want to make regarding accountability, and that is that if we are to move ahead in the eighties, we need to try to define what it is we're trying to accomplish and to gather and analyze information to determine how accountable we've been and in what areas we need to work in the future.

Morgan: We have a few minutes left. I wonder if there are one or two questions from the floor?

Gignilliat (in response to a question regarding the attitude of the public): I think that many people feel that even though we have fewer students in our schools we, perhaps, are not doing a better job—and yet it is costing more money. Obviously, inflation is a factor; we are also having to pay, through remedial programs, for failure at the primary and secondary education levels; and we have institutions which are unstable because of racial integration controversies.

Bell: The people to whom I have talked do not, I believe, have a deep-seated dissatisfaction or resentment about what's going on in higher education, just a nagging suspicion that all is not as it should be. This provides either an opportunity or a threat to higher education in the "crunch" that is to come. I think the universities and colleges are failing to communicate—to the legislators or to the general public—the good things they are doing. I think the institution that fails to communicate will be the one that will fail to be funded in the future.

PART TWO: PANEL OF REACTORS TO STATE OFFICIALS

Wallhaus: I sense that we don't have a great deal of disagreement on the important things, certainly not with regard to the purposes of education. It is clear that this panel of state officials is sensitive to what higher education is and what it is doing and that the panelists have a genuine concern for its welfare. The relationship between higher education and state government has improved, I believe, during the past several years—certainly, relative to the period of the late 1960s and early 1970s—but there *is* the potential in the years ahead for some deterioration of that relationship.

Undergirding the whole set of potential problems between institutions and state government is this issue of accountability versus autonomy. Although it will ebb and flow, it will always be with us, a tightrope we'll always have to walk. But I heard the panel say that accountability is linked to some other matters. This is very important and I certainly agree. It is clearly linked to the question of responsiveness and results. The panel was saying that if higher education can maintain its responsiveness, if it can produce what our students and the taxpayers expect, we're going to relieve the "accountability" pressures.

The panelists also said that there is a very close link between accountability and communications, and I think we can find some fault with communications on both sides of the fence. State legislators sometimes pose a technical question in different terms than the one they're really interested in having answered. For example, a year ago in Illinois, we had serious controversy over some issues that the faculty made very visible in the public arena—issues related to collective bargaining, related to working conditions, and so forth; and I think there was no question that the legislators—at least some of the General Assembly—were upset. However, instead of focusing more directly on the issues at hand, they asked, "What do these people do with their time?" Well, one thing led to another, and the next thing we knew, we were presenting to the legislature the results of a detailed clock-hour study. We sort of missed each other like ships in the night.

There appears to me to be a tendency for us—that is, institutional researchers who are primarily responsible for data communications with external constituents—to answer the questions we want to answer, and these are not necessarily the questions that are being asked. Sometimes we have mistakenly thought that we could diffuse accountability by not making certain information available or by reformulating the questions asked. Another problem we must work with legislators to avoid is that of putting each other in untenable positions. Legislators, as state officials, are also accountable—to voters and taxpayers—and I think that we sometimes put them into a difficult box with their constituents just as they, from time to time, put us—faculty and administrators of colleges and universities—in a difficult box with ours. It is important that state officials and legislators be sensitive to that potential problem which can lead to the loss of competent people; and certainly, higher education staff and faculty need to support state government, not just in monetary ways but with moral support as well.

In any case, I think that many of these problems are very closely linked together—accountability, responsiveness, communication, results—and that if we're going to deal with them it has to be with that understanding.

Saupe: It may be trite, but I think it's important to keep in mind that legislators and others at the state level have broader responsibilities than those of us in higher education. It is sometimes too easy for us to forget that state-level decisions affecting higher education are made in the context of other programs. Judgments about how we are being treated need to be conditioned by the broader context.

The vita of the state-level panelists is very impressive, particularly regarding length of experience in higher education. Their remarks underscored that impression, and some of them persuaded me that they know more about higher education than I do; Georgia may be fortunate in this regard.

We need to focus on the point I think the panel was making that we are in this thing together. It is not, I believe, a "we" and "they" situation, although we often are tempted to fall into the we-they trap as we work at our institutions and interface with the state-level people. The theme of communication as a two-way street ran through the panelists' remarks and underscores the point that we're in this together.

During the discussion of changing purposes, it occurred to me that changes in a number of areas—in the job market, in the energy situation, in demographics—may have implications for changes in higher education. Another reality is that there are "segments" within a state—the representation in the legislature and on the committees, pressure groups by geography, pressure groups by discipline or subject, any of which may rise and wane. The point I want to make is that there is a basic and fundamental purpose for higher education, and we cannot allow changes in social conditions and pressures to cause precipitous and wholesale changes in higher education. We must respond cautiously in order to maintain the basic continuity and integrity of higher education which has, I believe, stood the test for a long, long time.

In regard to accountability, I would note just one thing. What we try to do in my state, where we are fortunate to have lump-sum appropriations, is to outline the intent of our budget request, in terms of the uses we propose to make of funds requested, and then to determine, as best we can, the intent of the legislature, governor, coordinating board, and so forth and, indeed, to observe that intent as conscientiously as we can in preparing our budget. During the last few years we have talked about this, have done the best job we could with it, have increased our credibility with the state, and, thereby, have become more accountable.

Addressing the question of funding and financing, I would simply suggest that the variations in funding which might come from changes in formulae, items of year-to-year retrenchment or reallocation, and requests for program improvements or additions are trivial by comparison with the ravages of inflation. It is toward the solution of this problem that primary, state-level attention needs to go in the years immediately ahead.

We have spoken of communication problems. My message to the state-level folks is this: Don't ask us for specific displays of data or information; rather, tell us what the question or the problem is, what it is that needs to be known, and then let us, together, determine how we can best arrive at the answer or solution.

Cammack: I was especially impressed by the fact that many of the issues identified by the panel were the same ones that we all are dealing with on an ongoing basis, and although we were chastised a bit for the way in which we were addressing these issues, the chastisement was done with a considerable degree of "southern hospitality."

In the discussion of purposes, several issues were raised, but I think one issue is fundamental: that of cooperative extension. As we're all aware, we have had in most states a well-structured cooperative extension function within the university which, I think, has served the rural community well. We need to find ways in which the university can serve the urban community in the future in somewhat the same fashion as it has served the rural community in the past. Although our legislature is very interested, we in Wisconsin certainly have not yet found the way.

The question of performance audits was raised in the discussion of accountability. I think it is a fact that, throughout the country, legislative audit bureaus are moving, more and more, from financial audits to performance audits. We must all be aware of this issue, and we must work very closely with state government officials to determine the degree and level of performance audit. Will the performance audit be conducted at the program level? For example, will legislative audit bureaus evaluate the performance of a nursing program or are we going to be able to work out more general protocols which will assure state government that they are getting something more than the bait?

I was particularly interested in the support expressed by Mrs. Hoenes for taking a new look at formula funding, for looking at those things that are outside of the formulas—especially as we move into a period of stabilization or decline—and for rethinking our costing procedures, that is, the extent to which we need to fund fixed costs on a different basis than we fund variable costs.

We have begun to make some substantial inroads into being accountable in the quantitative sense, but we have a long way to go, I think, in terms of our ability to measure qualitative dimensions. I worry about these qualitative dimensions and wonder whether we may, at some point, have a discontinuity in quality in ways that we do not understand at all. Institutional researchers have a real challenge to develop techniques for measuring this qualitative dimension of accountability to enable higher education to be accountable for quality education to the students and the public.

All of these kinds of things, I think, tie into the whole question of communication. I like the suggestion that we work with state government to get the question asked and then be allowed to provide the answer (rather than specified, detailed information). However, although I think this would be a useful approach, it would not be possible to use in Wisconsin at this time. It is in the area of communicating with state government that we have been least successful; in the last year, the major issue has been the kind of information which must be communicated to state government, specifically whether we must report detailed position numbering and data about each individual employee in the university system.

Finally, I want to say again that I was impressed by the breadth of understanding of the earlier panel, the extent to which the issues they raised are the issues that I understand each of us to be facing, and the positive, constructive approach they were taking to suggest solutions.

Sutton: The "southern hospitality" and courtesy of the panelists from Georgia was noted earlier, and I would agree; they were very warm toward us. We might keep in mind, however, that these were highly selected people. The committee roles and the personal interests of these particular legislators is *in* education. They are committed. A randomly selected legislator in Alabama—and I assume in Georgia—might project a different image.

There is a sense among the rank-and-file, the citizens of the state that people of good will—legislators, college professors, institutional researchers—can find common purposes for higher education, identify mutual goals, and head in the same direction. These citizens perceive that the problem is simply for us all to work together to define areas of agreement and, by concentrating on these, to gradually eliminate areas of disagreement, thus evolving a kind of ideal world where the taxpayer is doing or paying his or her share and, in return, getting his money's worth from the administration and faculty working diligently and effectively to provide service in a cost-effective way.

I think this is an illusion. We need to recognize several inevitable differences in perspective on goals and objectives for higher education, as a function of role. From the standpoint of a legislator, the service activities of the institution are of more interest than instruction or research. The typical faculty member (if one can make such a generalization) would, I believe, rank pure research pretty high on the list of desirable ways to spend time; in contrast, I believe it would be last on the list of the "typical" legislator. To the legislator, practical service applications—how to get rid of disease in house plants or cattle; how to build roads less expensively—would be desirable applied research. For both groups, I suspect that instruction would be somewhere in the middle.

Another contrast in perspectives is that the interest of the politician is in the immediate (what can you do for me now? what is the economic payoff?) whereas the typical faculty concern tends to be centered more toward timeless values like "learning for learning's sake." Now, where do we go with these conflicting perspectives?

First, I do not believe that we should assume that our job is to eliminate the dissonance between the legislature and the institution; the dissonance that exists is inevitable. We don't have to *focus* on adversarial relationships, but it is important that we recognize the different perspective that the legislature brings to the discussion.

Higher education, although not in the favored position it was twenty years ago, still ranks relatively high with the public; state legislators stand relatively low and are being taken to task by the public for many things. It may be that legislators are guilty of a kind of displaced hostility, blaming higher education for many things for which it is not responsible. For us to assume that blame and say, "Let's resolve the problem," is to fight a losing battle.

Secondly, we waste a lot of time trying to define our terms. There is an unspeakable reality about what goes on in an institution, and although the definition of purpose is important in communicating the direction from which the institution is coming, that definition does not communicate everything that is happening—there is a difference between what people accomplish and that they intend to accomplish.

In all of this, institutional researchers have a unique role which is to accommodate the differences in the perceptions of higher education between the legislature, on the one hand, and the faculty, on the other. The purpose of the administration, as one of the panelists said earlier, is to reach hands in both directions, but I believe it is wrong to try to bring those hands together and clasp them. (Nothing scares me more than to hear that some of the faculty is on the way to the Capitol to talk to some legislators about something, or vice versa.) However, the administration can't be the shock absorber for *all* differences between the two. There is, in the delegation of accountability we discussed, a filtering and abstracting process that occurs. The role of the institutional researcher is to filter and to abstract—not to make the lens so clear and the circuits so direct that the natural differences in perspective held by the legislature and the faculty are emphasized.

Question: If we, as institutional researchers, look critically at some of these issues and respond to them in some formal way, doesn't that put us in a difficult position which may jeopardize our welfare?

Saupe: We have a responsibility to identify problems objectively, honestly, and rationally, and not to cover up something that we find is wrong. Yes, this could get us into trouble, but we like to believe that the institution—from the faculty member to the president—is committed to rationality and truth and that we will not be jeopardized for finding the problem.

I have said many times that institutional researchers should not get involved in politics. However I *have* made the suggestion (perhaps naive) that we might, from time to time, go to the legislature and say, "We have found a problem and we are going to do something about it." Then, we would come back in a year and say, "Look, we told you about this problem last year, and here's what we've done about it." I'm not sure I've sold anyone on this approach, but it's kind of interesting to think about.

Sutton: I don't think that approach is naive at all. That kind of candor with the legislature would be very pragmatic because it would increase credibility, the most important commodity in our dealings with that body.

The institution lives in a political context. Joe Saupe's position is that the institutional researcher should not be in the link of politics in the same sense that the institutional representative, or the alumni director, or the football coach is. However, it is my view that institutional research is applied research and differs from higher education research in that way. If you (institutional researchers) are not dealing with matters that are relatively current or short-term (or long-term matters that will have current impact or need decisions) then you probably ought to be in the college of education, sociology, economics, or political science—in a bureau or center—but not in administration. Administration has a very practical job to do which is to help faculty members and legislators frame their questions vis a vis higher education as well as to respond to them.

Question—regarding the competition for state funds:

Sutton: Higher education needs to be able to "make its case" in competition with other needs which are considered to be worthwhile. If, in the end, cuts (or "reforms") have to be made in the educational budget, we should do what we can to preclude the "meat ax" approach and to help direct a gentle and more careful surgery.

Wallhaus: I suspect that, in most states, higher education simply does not have the political clout, the lobbying and vote-getting capability, that other social sectors do. The relevance of that is that if higher education is going to participate effectively in the "cutting of the pie" it will have to do so on other grounds, namely, those of credibility and "having our act together" which means having our information and our case well formulated.

Saupe: I think that the university as an organization—the lobbyists, the institutional researchers, the administration—does *not* participate in the process of dividing up the pie. We make our case, credibly providing information and expressing our preferences and needs, but we do not argue for tax increases nor do we attempt to compete with elementary and secondary schools or highways or what-have-you.

One thing that the universities could do would be to offer to the legislature, in an organized way, policy analysis services. The bureau of public policy analysis, for example, might provide such services, illustrating that it doesn't operate completely in an academic vacuum but also makes its wisdom, expertise, and analytical capabilities directly available for legislative purposes.

Cammack: Although I think that what is being proposed (regarding policy analysis services) is a good idea, I believe it would be a bit hard to implement, and I don't believe that higher education would fare any differently in competition with the other agencies. People have the ability to adapt very readily to the environment in which they find themselves. In the current political environment, they must survive politically, and to do so they must respond to political issues.

Regarding credibility, we institutional researchers find ourselves in a difficult situation in that we must walk a fine line in our attempt to be credible to two groups of people: internally, to our faculty (who view themselves as having the responsibility for higher education) and others in the university with whom we must deal; and externally, to state government which provides the funds.

Sutton: The concept of the "delegation of accountability—from the board, to the institution, to the deans and department chairs, to the faculty, and, in the end, to the student through the grading process—is one which I have not heard expressed before. In a sense, that's scant relief, because the students go back to their parents and to the taxpayers as a whole and, in informal ways, make or break our case with the legislature. If we want to make a good case with legislators, we won't come in with charts and statistics and chi squares but will talk about people, people in their county or their district. The skills and directions of institutional researchers are given meaning when translated into human terms.

Question—regarding students and the job market:

Saupe: We are currently concerned about the behavior of students as they perceive and respond to the job market. I would suggest to you that the job market picture will be changing in ways that will cause students to return, for example, to the arts and sciences and that we should be careful about overreacting to any current shifts.

Wallhaus: Matters of accountability tend to focus on those issues that are on the minds of the public at a particular time. We are now in a period when there is much emphasis on occupational, vocational, and professional programs. That, I think, may well change. One thing we *do* know about higher education is that priorities do change.

Higher education is sometimes charged with not being responsive, but I believe that we very often find ourselves in trouble because we overrespond. We overproduced physicists to respond to a need in the space race technology area; there is some evidence that this has happened in law; and, in my judgment, we are going to overproduce various kinds of professionals in health and business. We need to tell a pretty important story about our responsiveness and the difficulty we have because, in some cases, we respond too well.

Sidney Suslow Outstanding Forum Paper Award

In early May of 1977, Sidney Suslow, one of the founders of the Association for Institutional Research passed away. This gentle, inspiring human being had not only served as president of the Association, he had also continuously dedicated himself to the improvement of institutional research as a profession.

Nowhere in the tireless efforts of Sidney Suslow was his dedication, encouragement, and high standard of excellence for the profession better exemplified than in his contributions to the establishment of extensive and quality publications sponsored by the Association. He served as chairperson of the Publications Board and, until his death, served as editor of the quarterly monograph, *New Directions for Institutional Research*.

It was in recognition of this special member of the Association, and to perpetuate his concern for excellence in the profession and its publications, that the Publications Board recommended, and the Executive Committee approved, the establishment of the Sidney Suslow Outstanding Forum Paper Award. This award is to be presented annually to the individual presenting the Forum paper (from the previous year's Forum) judged to be of the highest quality with regard to the application of research methodology and analysis as well as the contribution of the topic to the development of the field of institutional research.

The first Sidney Suslow Outstanding Forum Paper Award (for the outstanding paper presented at the previous Forum) was presented at the 1978 Forum in Houston. The paper was printed in its entirety in the proceedings of that Forum, *Research and Planning for Higher Education*. The award for the 1978 outstanding paper was presented at the 1979 Forum in San Diego and was published in the first special AIR Forum issue of the AIR journal, *Research in Higher Education*. Subsequent award papers have been and will continue to be published in their entirety in the special issue of *Research in Higher Education*.

SIDNEY SUSLOW OUTSTANDING FORUM PAPER AWARD RECIPIENT

1977 Forum: *Calculating the Economic Multipliers for Local University Spending*
Charles Dudley Salley, Georgia State University
1978 Forum: *A Longitudinal Study of Grades in 144 Undergraduate Courses*
James E. Prather, Glynton Smith, and Janet E. Kodras,
Georgia State University
1979 Forum: *The Study of Academic Department Performance*
Alan C. Bare, Rutgers, The State University of New Jersey

Abstracts and Summaries of Contributed Papers, Seminars, Panels, Workshops, and Special Interest/Regional Group Meetings

1A RELATING CRITERIA, METHODOLOGIES, AND DATA IN PROGRAM REVIEW AND EVALUATION

(two-part workshop)

LARRY A. BRASKAMP (co-presenter), Head, Measurement and Research Division, University of Illinois at Urbana-Champaign

H. RICHARD SMOCK (co-presenter), Head, Course Development Division, University of Illinois at Urbana-Champaign

RICHARD F. WILSON (co-presenter), Assistant Director, Office of Planning and Evaluation, University of Illinois at Urbana-Champaign

A brief description of an academic department was given by the workshop presenters. Following this, different groups of workshop participants received alternative lists of actual program evaluation criteria. The task was for each group to select from a sample list an appropriate evaluation methodology for the department. (Alternatively, participants designed their own methodology.) Each group then selected and defended appropriate sources of data, given their evaluative criteria and methodology. Comparisons and critiques of the different plans were offered by the directors of the workshop.

1B STATISTICAL TECHNIQUES AND PACKAGES FOR PLANNING AND ANALYSIS (workshop)

JAMES J. McGOVERN (presenter), Associate Director, Illinois Board of Higher Education

The staff of the Illinois Board of Higher Education has gained considerable experience in using statistical packages for analysis and planning (SPS, SPSS, SAS, and BMDP). This workshop provided an overview of (a) the application of statistical methods, (b) the packages to use, (c) the limitations on interpretations, and (d) precautions on translating data results into policies. The choice of analysis and statistical packages was explained for a series of examples. Presenters then solicited new problems and helped participants select appropriate analysis procedures.

1E THE INSTITUTIONAL RESEARCHER AS A CHANGE AGENT

(two-part workshop)

STUART M. TERRASS (co-presenter), Research Associate, Office of the Assistant to the President, The University of Akron

VELMA POMRENKE (co-presenter), Research Associate and Coordinator, Office of Team Leadership Development, The University of Akron

For those in institutional research, the challenge of the eighties demands more than technical expertise on questions of resource redirection and reallocation; it requires them to be able to work with other organizational personnel, highly diverse in position, expertise, and perceptual stance, to ensure that the needed changes are accepted and implemented.

Increasingly, the role of interpreter of data, and by implication that of change agent, is becoming a part of the responsibility of the institutional researcher. This workshop was designed to increase participants' skills in serving as internal change agents within their own organizations with regard to the dynamics of change, perception and values, and role functions within a group. In addition, it was intended to facilitate the sharing of experiences within the group, a group broadly representative in higher education, both nationally and internationally.

1F THE DAVIS COLLEGE SIMULATON (workshop)

FREDERIC JACOBS (co-presenter), Assistant Dean, Programs in Professional Education and Director, Institute for the Management of Lifelong Education (MLE), Harvard University Graduate School of Education

ROBERT HAHN (co-presenter), Associate Director, Institute for the Management of Lifelong Education (MLE), Harvard University Graduate School of Education

The Davis College Simulation, a workshop of the Institute for the Management of Lifelong Education (MLE), presented fifty pages of vital data on a private liberal arts college faced with the challenges of the eighties: rising costs and declining enrollments. Participants were asked to determine the facts of the situation, identify and analyze the key problems, and design an institutional research plan which would provide the college with the information it needs to make crucial decisions about its future. (Presently, the college conducts no institutional research.) "Davis College" is a fictional creation which has been painstakingly researched to assure the representativeness and realism of its component parts. (The simulation is a part of the curriculum of MLE, a cooperative activity of Harvard and the College Board.)

1G MICROCOMPUTERIZED ENROLLMENT PLANNING: A HANDS-ON APPROACH (workshop)

R.H. TOPOROVSKY (presenter), Professor of Economics and Finance, Fairleigh Dickinson University

This "hands-on" workshop was designed for those concerned with enrollment projections. The planning outcomes of a rather complex econometric model—the DEPM-version 7.1—were simulated on a microcomputer. No prior programming or special technical experience was required to use the technology, and participants were able to structure their own problems and run planning simulations during the workshop. The impact of changes in tuition, demand, attrition, and other variables on degrees conferred and enrollment were readily stimulated and analyzed as the output was listed on the terminals. Disketts and tapes were available to those considering future use of the technology.

2A TEXAS ASSOCIATION FOR INSTITUTIONAL RESEARCH (TAIR) (special interest group)

ANN CLINTON SEWELL (coordinator), Director of Institutional Research, Texas Christian University

Following the performance of the Morehouse College Glee Club, TAIR participants went to the Pleasant Peasant, a local restaurant, for a social hour and dinner. There was an opportunity to meet new institutional research officers, to discuss institutional research in Texas institutions, and to make some plans for the next state conference.

2B CANADIAN INTEREST GROUP (special interest group)

ERIC A. HILLMAN (coordinator), Academic Analyst, Office of Institutional Research, University of Calgary

The Canadian Interest Group met Sunday evening from 7:00–10:00 for a social hour and dinner.

4A OHIO ASSOCIATION FOR INSTITUTIONAL RESEARCH (special interest group)

JOHN A. MUFFO (co-chair), Director of Institutional Research, Cleveland State University

STUART M. TERRASS (co-chair), Research Associate, Office of the Assistant to the President, The University of Akron

This session was designed to bring together institutional researchers from the various sectors of higher education in Ohio. There were two primary items on the agenda. First, is there sufficient interest among institutional researchers to form an Ohio AIR group? If so, should the group meet in Ohio at least once annually? Other items of interest to those present were also discussed.

4B NORTH EAST ASSOCIATION FOR INSTITUTIONAL RESEARCH (NEAIR) (special interest group)

ROBERT F. GROSE (convener), President, NEAIR, and Director of Institutional Research, Amherst College

4C COMMUNITY COLLEGES (special interest group)

GARY A. RICE (convener), Dean, Information Systems and Planning, Yakima Valley College

A "town hall meeting" focused on the current and future roles of community college researchers in AIR. Short presentations by several panel members on AIR's role in community college research were followed by dialogue with the audience about trends in community colleges and ways in which AIR can assist two-year college researchers. Panelists were Edward Beyen, Metropolitan Community Colleges (Missouri), and Horace F. Griffitts, Director of Research, Tarrant County Junior College District (Texas).

4E NORTH CAROLINA ASSOCIATION FOR INSTITUTIONAL RESEARCH (NCAIR) AND VIRGINIA ASSOCIATION FOR INSTITUTIONAL RESEARCH (VAIR) (special interest group)

ROBERT M. USSERY (co-convener), President NCAIR, and Director of Institutional Research, East Carolina University
STUART M. BOUNDS (co-convener), President, VAIR, and Coordinator of Institutional Research, Thomas Nelson Community College

This session was devoted to discussion of topics of common interest to two neighboring state associations: the North Carolina and Virginia Associations for Institutional Research. Opportunities for mutually beneficial activities were assessed.

4G SOUTHERN ASSOCIATION FOR INSTITUTIONAL RESEARCH (SAIR) (special interest group)

SUZANNE W. LARSEN (convener), President, SAIR, and Associate Director of Institutional Research, University of Tennessee-Knoxville

This session focused on two areas: (1) a short business meeting and (2) a presentation by Parker Young, professor of higher education, Institute of Higher Education, University of Georgia, on the legal liabilities associated with higher education administration.

4T(9) AIR PAST PRESIDENTS (OLD BOYS AND GIRL CLUB) (special interest group)

(This group has no "convenor." It convenes automatically.)

talk, eat, drink, lie, fabricate, eat, evade, drink, plot, eat, distort, drink, quibble, eat, dispute, eat, mislead, drink, talk, deceive, eat, libel, drink, perjure, eat, drink, etc.

5H KEYNOTE ADDRESS: PLANNING AS AN ADAPTIVE PROCESS (general session)

F. CRAIG JOHNSON (session chair), President, AIR
JOE B. EZELL (AIR host), Chairperson, AIR Local Arrangements Committee
WILLIAM M. SUTTLES (institutional host), Executive Vice President and Provost, Georgia State University
BARBARA S. UEHLING (keynote speaker), Chancellor, University of Missouri-Columbia

(Note: An edited transcript of this address appears on Page 3.)

6A APPROACHES TO ONGOING RESOURCE REALLOCATION AND PLANNING (panel)

R. SUE MIMS (moderator), Director, Office of Academic Planning and Analysis, University of Michigan
THOMAS A. KARMAN, Chair, Department of Educational Administration and Higher Education, Oklahoma State University
NICK L. POULTON, Director of University Planning, Western Michigan University

Institutional research and planning challenges of the eighties include finding the means for living within stable or declining resources as well as for responding to new opportunities and to new needs. The panel, and subsequent discussion, focused on proven approaches to ongoing reallocation and planning that facilitate adaptation to stable budgets and/or to new priorities. Each discussant outlined a reallocation/planning mechanism presently in operation; the Priority Fund (University of Michigan), the Excellence Fund (Oklahoma State University), and the Program Development Fund (Western Michigan University). Discussion covered the purposes, procedures, problems, strengths, and impacts.

6B COLLECTIVE BARGAINING: MEETING ITS CHALLENGES IN THE EIGHTIES (panel)

FREDERICK J. SPECKEEN (moderator), President, Fairview College (Alberta)
STEPHEN W. AHRENS, Assistant Director of Institutional Research, West Virginia University
ROBERT CHOQUETTE, Lawyer, Federation des CEGEPS (Quebec)
AIDAN DUGGAN, Executive Secretary, Royal Irish Academy
ARTHUR G. POTTER, Director of Pedagogical Services and Secretary General, Champlain Regional College (Quebec)

This panel reviewed the development of the collective bargaining process in establishing salaries and working conditions for faculty members as well as the impact on the overall functioning of educational institutions. The process was considered from an historical point of view but with special attention paid to the implications for institutional planning, development, and the use of resources during the 1980s. Comprising panelists from several countries, the session was intended to provide an international perspective on the effects of collective bargaining and prospects for the future.

6C STUDENT FORECASTING AND OUTCOMES (contributed paper)

J. STANLEY LAUGHLIN (chair), Director of Institutional Research, Idaho State University
LARRY O. HUNTER (reactor), Director, Management Information Services, University of Idaho

6C(1) *(withdrawn)*

6C(2) *THE FORECASTING OF POSTSECONDARY DEMAND IN MANITOBA: THE MOTIVATIONAL INDEX AND THE DEMAND INDEX AS AN ENROLLMENT FORECASTING TOOL*

BARRY J. WARRACK, Senior Research Analyst, Department of Labour and Manpower-Research Branch (Manitoba)
C. NEIL RUSSELL, Assistant Director, Department of Education (Manitoba)

The "motivational index" and the "demand index" were developed to forecast the motivations and intentions of high school students toward postsecondary education. These indices were tested with surveys of more than 14,000 high school students with respect to actual outcomes and validated by surveying more than 5,000 students (as to their post-high school plans). The theoretical basis of these indices, their use in enrollment forecasting, and the accuracy of the enrollment demand prediction model are discussed in this paper.

ERIC No. HE 012 846

6D ECONOMIC INDICATORS OF THE IMPACT OF HIGHER EDUCATION (contributed papers)

WEBSTER C. CASH (chair), Director of Institutional Research and Planning, Atlanta University Center

DAVID R. WITMER (reactor), Assistant Chancellor, Executive Division, University of Wisconsin-La Crosse

6D(1) *THE ECONOMIC IMPACT OF THE LOUISIANA STATE UNIVERSITY SYSTEM ON THE LOUISIANA ECONOMY*

SHELDON D. ENGLER, Research Economist, Division of Business Research, Louisiana State University

JAMES W. FIRNBERG, Coordinator, System Office of Institutional Research, Louisiana State University System

L. ROBERT KUHN, Jr., Research Analyst, System Office of Institutional Research, Louisiana State University

In this study, an econometric model is developed for use in measuring the impact of the Louisiana State University (LSU) System upon the Louisiana economy. Emphasis is placed on measuring the effects of enrollment changes, salary and wage expenditures, and campus construction activity. The results show that, overall, each dollar spent by the LSU System creates another $.72 of income within the state economy. The model can be applied to any other institution and can be recalibrated at various points in time. It is also useful in demonstrating the importance of institutions to state legislatures and the general public.

ERIC No. HE 012 847

6D(2) *DEVELOPING, REPORTING, AND USE OF INDICATORS TO EXAMINE HIGHER EDUCATION*

MARY A. GOLLADAY, Acting Director, Division of Statistical Services, National Center for Education Statistics (NCES)

NANCY B. DEARMAN, Editor, *The Condition of Education,* National Center for Education Statistics (NCES)

Reliable, accepted indicators for education have proven to be difficult to develop. This paper considers problems related to the development, reporting, and use of indicators examining higher education. Several alternative measures are considered, drawing on examples used in the National Center for Education Statistics' *Condition of Education* reports over the past six years. Both universe and sample data bases are included. Three types of concerns are addressed: appropriate levels of aggregation; indicators examining a single policy issue which have derived from different data bases; and changes in data bases over time. The discussion emphasizes a pragmatic, as opposed to a theoretical, view.

6E INDICES OF ACADEMIC PROGRAMS AND CURRICULUM DESIGN (contributed papers)

CLIFFORD T. STEWART (chair), Dean of Academic Affairs, Adelphi University

RICHARD R. PERRY (reactor), Associate Vice President for Academic Affairs, University of Toledo

6E(1) *EVOLVING A MODEL FOR USING COMPARATIVE INDICES OF ACADEMIC PROGRAMS IN INSTITUTIONAL, REGIONAL, AND STATE-LEVEL PLANNING AND DECISION MAKING*

S.V. MARTORANA, Professor and Research Associate, Center for the Study of Higher Education, Pennsylvania State University

EILEEN KUHNS, Associate Professor and Coordinator, Education Administration Program, Catholic University of America

Current conditions in postsecondary education cause high priority to be placed on program justification in planning and policy decisions; the methodology for comparing programs is still developing. A major eastern state has just completed a four-year effort to develop an operational model for comparing academic programs and evaluating their needs in 200 postsecondary institutions of all types. The paper reports experience with this program analysis model in order to inform institutional researchers and planners about its adoption, use, and refinement.

ERIC No. HE 012 848

6E(2) *CURRICULUM DESIGN AND EVALUATION: AN EMPLOYER-CENTERED ACTION APPROACH*

MANTHA VLAHOS MEHALLIS, Director of Institutional Research and Systems Planning, Broward Community College
(Paper presented by Robert F. Grose, Director of Institutional Research, Amherst College.)

Curricula, for the most part, are developed on the basis of what has "always been taught" or what educators "know" students need. Since many community college programs ultimately lead to employment, potential employers can be productively involved in the process of curriculum development. The paper reports a study which developed and validated an employer-centered action system for curriculum development and evaluation. It utilized a descriptive/action research design whereby a research team personally interviewed all major employers in a two-year period. Results of an employer needs assessment and task analyses were used to identify exit competencies and to translate them into new curricula or into evaluation of existing curricula. The resultant employer-centered action system for curriculum development is in operation at a large, urban community college and is fostering positive interaction and articulation between the college and its community.

ERIC No. HE 012 849

6F THE DYNAMICS OF PLANNING: STRATEGIC AND POLITICAL APPROACHES (seminar)

MARVIN W. PETERSON (chair), Director and Professor, Center for the Study of Higher Education, University of Michigan
FREDERICK E. BALDERSTON, Professor, School of Business Administration, University of California-Berkeley
DONALD E. WALKER, President, Southeastern Massachusetts University

After almost a decade of flirtation and frustration with formal, rational techniques and structures for planning that were largely based on static patterns and were internally oriented (e.g. MIS, simulation models, master plans, MBO), colleges and universities have become more sophisticated about, and more aware of, the need to view planning as a more dynamic process and to encompass more external and environmental trends and forces. Two approaches—one representing a more rational attempt to develop a strategy for relating the institution to its environment and the other a more political and expedient view of this process—were presented and debated.

6G FINANCING HIGHER EDUCATION IN THE FIFTY STATES (seminar)

MARILYN McCOY (chair), Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)
D. KENT HALSTEAD, Research Economist, National Institute of Education, U.S. Department of Health, Education and Welfare
LYMAN A. GLENNY, Professor of Higher Education, University of California, Berkeley

The importance of state governments in financing public higher education is well known, yet remarkably little critical analysis has been directed toward better understanding of this dominant source of support. This inattention has been due partly to the complexity and variance of state and local finances, which preclude simple, meaningful comparisons. During this session, McCoy and Halstead discussed a new approach which isolates key factors governing appropriation levels for each state, establishes a formula for their interrelationship, and introduces a diagram format to facilitate analysis. Their analysis builds a profile of the state which includes the source and level of enrollments, state and local government tax capacity and effort, evaluation of individual revenue sources, and examination of institutional expenditure patterns. Key findings of the study were summarized and questions regarding individual states were considered after this presentation. In a second presentation, Glenny provided an in-depth case study of a single state's financing response to recent developments, focusing on California's financial responses to Proposition 13 and the likely outcomes if Proposition 9 were passed.

7H/8H CONTRIBUTED PAPER EXPOSITIONS

DANIEL R. COLEMAN (coordinator), Chairperson, Contributed Papers Committee, AIR

Fifty-six papers were presented in this exposition format. These papers were of more limited scope than those presented in the more traditional sessions in that they, perhaps, dealt with a narrow topic, referred to only one institution, or had other limiting characteristics which seemed to suggest their suitability for this type of presentation. There was no qualitative distinction between the two formats; format decisions were made solely on the basis of the scope of the paper.

7H(1) *A LONGITUDINAL STUDY OF STUDENT OUTCOMES AT A STATE UNIVERSITY*

JEAN E. ENDO, Assistant Director, Academic Planning and Analysis, University of Colorado at Boulder

RICHARD L. HARPEL, Assistant Vice Chancellor for Academic Affairs, University of Colorado at Boulder

This study examined the impact of liberal arts and professional programs on a number of student outcomes variables. Outcomes data were gathered from the 1975 entering freshman cohort at the University of Colorado at Boulder through a 1975 Freshman Questionnaire and a 1979 Graduating Students Survey. Program impact was measured using a model developed by Astin. Type of program was found to have at least some *impact* on fourteen variables—variables which also showed clear overall patterns of *change* over time and on which there were important *output* (senior year) *differences* by program type. The data from this study indicate that there were substantial benefits for the liberal arts students.

ERIC No. HE 012 850

7H(2) *FACTORS AFFECTING TRADITIONAL VS. NONTRADITIONAL STUDENT SUBSCRIPTION TO HIGHER EDUCATION*

E. MICHAEL STAMAN, Assistant to the President and Director of Planning and Institutional Studies, Christopher Newport College

Profiles of student goals, expectations about college, and reasons for coming to college are presented. Factor analysis was used to develop dependent variables for use in Multiple Classification analyses. Conclusions are drawn about the ability to measure the "nontraditionalness" of a student and about the separate and distinct nature of traditional versus nontraditional students at the institution being studied. The findings and the design may be of interest to individuals planning research into the general areas of student goals, attitudes, and expectations. The results of this single-institution study may help to provide additional insight into the nature of the subpopulations at nontraditional institutions.

7H(3) *INSTITUTIONAL VARIABILITY IN THE CAUSES OF COLLEGE ATTRITION*

MICHAEL J. VALIGA, Program Specialist, Institutional Services Unit, American College Testing Program (ACT)

With static or declining enrollments predicted for the 1980s, the causes of student attrition are of increasing concern to college personnel. Because of the complexity of attrition patterns, large numbers of attrition-related variables must be considered. These variables often differ by institution. This paper presents data that demonstrate the interinstitutional variability in the causes of attrition. This variability appears to be related to the unique characteristics, services, and programs of the local institutions. The results suggest that small-scale, institutionally based attrition studies may provide more accurate data for use in campus retention programs than studies based on a nationwide sample of students.

7H(4) *COMPARATIVE EFFICIENCIES IN PROJECTING FACULTY RANK DISTRIBUTION*

CRAIG J. GREENHILL, Academic Analyst, Office of Institutional Research, University of Calgary (Alberta)

Comparative applications of simple and complex faculty flow models are examined to determine (1) their relative demands for data and calculations, (2) the divergence of their projections, especially when modeling a no-growth faculty, and (3) an estimate of the error incurred (i.e., the cost to analysis) when a simple model is used. The results support the view that academic personnel policy changes have delayed effects and are non-linear. The comparison indicates that simple models may mislead analysts by being insensitive, for example, to backlogs of term appointees who expect promotion. Similarly, it may be that no model is needed at all if one is only looking for estimates on a two-year horizon.

ERIC No. HE 012 851

7H(5) *FACULTY SALARIES: ANALYSING THE DIFFERENCE BETWEEN AVERAGE SALARIES IN TERMS OF DISTRIBUTION EFFECT AND SALARY EFFECT*

GUY GIRARD, Chargé de recherche, Conference of Rectors and Principals of Quebec Universities

JACQUES BORDELEAU, Chargé de recherche, Conference of Rectors and Principals of Quebec Universities

A technique of salary analysis is proposed which links the comparison of average salaries between different populations and the results from regression analysis performed with the corresponding populations. The technique combines the estimated parameters and the mean values of the corresponding variables to break down the difference between the average salaries of the two populations into two parts: one which is due to the distribution effect and one which measures the salary effect.

ERIC No. HE 012 852

7H(6) *INTERINSTITUTIONAL COMPARISONS OF FACULTY COMPENSATION*

ROSEMARY CLIFF, Associate Director, Office of Institutional Studies, University of Southern California

An examination is made of five methods of combining the Average Compensations reported by AAUP for each academic rank to produce a single summary statistic that will represent the Average Faculty Compensation at a given institution. The use of weights based on the number of faculty at each rank was found to be less satisfactory than a simple average of the average compensations in assessing relative standing among peer institutions and in measuring compensation increases over time.

ERIC No. HE 012 853

7H(7) *A COST BEHAVIOR ANALYSIS OF THE INSTRUCTION FUNCTION AT A PRIVATE UNIVERSITY*

MARK CHISHOLM, Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)

DOUG LITTLE, Director, Administrative Systems, Drake University

Results of a study that was carried out at Drake University, as part of a larger NACUBO/NCHEMS project, are reported. The study utilized the concept of instructional capacity to examine the instruction function. Data from an eight-semester period were used to compute excess capacity (instructional capacity minus actual enrollment) and expenditure values at the section, course, department, college, and student major levels of aggregation. These data elements were found to be useful in the following circumstances: (a) justifying faculty positions in a departmental or college budget, (b) doing a curricular analysis of the courses in a department, and (c) identifying student majors, where student recruitment by tuition discounting would be profitable.

7H(8) *ON-LINE COURSE SCHEDULE PLANNING: BENEFITS AND LIMITATIONS*

SANDRA J. STORRAR, Director, Advisement and Scheduling, College of Arts and Sciences, Georgia State University

The commuter-type student seldom follows a traditional fall, winter, spring schedule of a full course load each quarter. A university that serves commuter students needs course schedule planning that is adaptive and responsive to its clientele. A computer-assisted scheduling strategy can be developed to meet this need. First, essential factors in academic course planning are identified. The human context and technical aspects of planning are then considered. The benefits and limitations of one university's on-line system are offered as they might relate to other postsecondary institutions.

7H(9) *USE OF THE COMMUNITY COLLEGE GOALS INVENTORY IN ASSESSING INSTITUTIONAL SUCCESS IN ALLOCATING APPROPRIATE PRIORITIES TO ITS GOALS AND TO ESTIMATE THE CHANGE OF PRIORITIES NEEDED TO ACHIEVE ITS INTENDED OUTCOMES*

MADAN CAPOOR, Director of Institutional Research, Middlesex County College

The Community College Goals Inventory was used by the college to clarify and reformulate its goals, to assess success in pursuing the desired goals, and to indentify goal areas needing reallocation of emphasis and resources. The college was one of the first to use this new planning tool, which assumes that constituent perceptions accurately reflect policies that are pursued and outcomes that are achieved. The ratings are current and preferred goals were used to assess the college's success in pursuing its goals. Results of the study assist decision makers in setting policy and assigning priorities for the future.

ERIC No. HE 012 854

7H(10) *BOX-JENKINS ENROLLMENT FORECASTING*

GERALD R. THRASHER, Jr., Director of Institutional Research, Eastern Michigan University

Box-Jenkins univariate time series analysis is applied to enrollment forecasting. Assuming that the observations are a realization of a stationary linear stochastic process, the forecasting model is constructed following a three-step iterative process of identification, estimation, and diagnosis using the autocorrelation and partial autocorrelation functions, regular and seasonal differences of various degrees, and the residuals as a new series. Enrollment data from a midwestern university of 19,000 students and the state of Michigan are used to illustrate the principles; the results compare favorably with other models. Box-Jenkins analyses of the residuals of structural models have the advantage of revealing inadequacies undetectable by other methods.

7H(11) *ANALYSIS OF THE NEEDS FOR NONACADEMIC STAFF AND OPERATING FUNDS IN A UNIVERSITY*

FRANZ BINGEN, Professor, Vrije Universiteit Brussel
CARLOS SIAU, Research Assistant, Vrije Universiteit Brussel

Regressions can be used to analyze the relationship between departmental activities and the need for non-academic staff and operating funds. Support costs are broken into task categories and related to certain basic variables describing the composition and activity of the unit (e.g. FTE academic staff, teaching load). The results are then linked in a total model which predicts the costs for departmental support based on institutional activity variables such as number of fields of study, number of students, number of teaching and research staff. The model is generalizable to many national settings.

ERIC No. 012 855

7H(12) *GOVERNMENT RESOURCES REVISITED: INTEGRATING GOVERNMENT DATA WITH INSTITUTIONAL PLANNING*

MARGARET C. REAP, Director of Educational Development and Institutional Research, North Harris County College

Matching the demands of an increasingly sophisticated student market with a stringent budget continuously eroded by inflation and accountability calls for reexamination of standard resources. The efficient employment of government data as an effective resource for educational institutions has been hampered by the difficulties of identifying and accessing the appropriate data. This paper reports on an approach to the use of government data as a resource for institutional planning by a community college in a growing urban area in the Southwest. Identification and access to sources are discussed. Examples of the use of government data are reported in three areas: enrollment and growth projections, college expansion, and new programs.

7H(13) *DEVELOPMENT OF TWO REVENUE AND EXPENDITURE FORECAST MODELS FOR A HEALTH CARE EDUCATION FACILITY*

DANIEL P. SHOEMAKER, Assistant Professor, Michigan State University
THOMAS J. PALMER, Specialist, Office of Institutional Research, Michigan State University
WILLIAM A. SIMPSON, Associate Professor, Michigan State University

This paper presents two revenue and expenditure forecasting models developed to examine the clinical teaching facility at Michigan State University. Regressions were used to develop a cost simulation model which projected revenues based on increments in patient volume and expenditures as the sum of fixed and variable costs. A second model was developed on the EDUCOM system, used to test alternatives for achieving fiscal balance by "trading off" identified cost and revenue variables within set constraints. Both models were found to be effective means of testing policy alternatives in the operation of the health care facility.

7H(14) *ASSESSING THE COSTS OF CLINICAL CLERKSHIPS BY MEANS OF A DIFFERENTIAL COSTING MODEL*

DANIEL P. SHOEMAKER, Assistant Professor, Michigan State University
JOHN M. IRELAND, Research Assistant, Michigan State University
THOMAS J. PALMER, Specialist, Office of Institutional Research, Michigan State University

This study calculates a total cost of clinical clerkship training. The assumption behind this effort was that once the process was developed, greater accountability for control of costs could be achieved. The study allocated costs to six general cost categories. Direct and indirect costs in each of these categories were determined by means of a differential costing technique. These costs were further disaggregated by type and normalized based on type of student and rotation, so that health-area administrators could determine the total costs of their clerkships by application of this standardized costing model.

7H(15) *BUDGET UNIT ANALYSIS IN AN ERA OF RETRENCHMENT: THE INTERFACE BETWEEN FINANCIAL PLANNING AND PROGRAM EVALUATION*

MIKE STEVENSON, Director of Research and Planning, Mt. Hood Community College
R. DAN WALLERI, Research Specialist, Mt. Hood Community College

The process, findings, and utility of an institutionwide budget unit analysis conducted at a community college during the 1979–80 year are described. The study was initiated because of the need to cut more than 35% from the proposed 1980–81 budget due to declining enrollment, local budget levy defeats, and inflation. Financial projections were developed by applying a modified version of the Information Exchange Procedures Model. Evaluation data were derived from the system developed to meet the requirements of the 1976 Vocational Education Act. From assembled information, a composite rating was created for each program and service offered by the college. The resulting report was then used by college decision makers in preparing the reduced budget. How the information was used by college administrators and the relationship between the budget analysis and the proposed reduced budget are also discussed.

ERIC No. HE 012 856

7H(16) *COMPUTER-BASED PLANNING MODEL APPLICATIONS: FINANCIAL PLANNING MODELS AND AN ON-LINE DATA BASE*

MICHAEL E. BAKER, Director of Institutional Planning, Carnegie-Mellon University
EDWARD S. COWDEN, Planning Intern, Carnegie-Mellon University

In the past, Institutional Researchers have focused on computers as a tool for data retrieval and summarization. In the future, computers will play a greater role as a planning tool. The authors have used computer planning models for two purposes: financial planning and the development of an on-line planning data base. In this paper, a comparison is made of two proprietary financial planning models. Both EDUCOM'S EFPM package and ADR Service's EMPIRE package have been used for financial planning at Carnegie-Mellon University. These systems have been compared on features important to both model builders and model users. This paper also provides a review of the creation and use of on-line planning data base, using the EMPIRE system. The discussion includes both trade-offs made in designing a planning data base and features of the particular model used.

7H(17) *INFORMATION SYSTEMS MANAGEMENT: A NEW FUNCTION FOR INSTITUTIONAL RESEARCH*

DENISE STRENGLEIN, Data Base Coordinator, Office of Institutional Research, University of South Florida

Out of the chaos of the information explosion set off by the introduction of the computer to higher education has come a new function: institutional information systems management. Consideration of the duties, skills, and tools associated with this function leads to the conclusion that information systems management is logically an extension of institutional research.

ERIC No. HE 012 857

7H(18) *TOWARD IMPROVING THE QUALITY OF INCOMING STUDENTS WHILE MAINTAINING FAIRNESS IN ADMISSIONS*

ROBERT S. LAY, Program Director of Enrollment Management Research, Boston College
JOHN MAGUIRE, Dean of Admissions, Records, and Financial Aid, Boston College

Given the projected decline in the traditional, college-going markets and a likely heightened competition for students, it will be a challenge to provide management information which can improve the quality of incoming students and at the same time assure fairness. An approach which integrates a number of methods into an ongoing research program is suggested and illustrative findings are presented. First, a systematic admissions procedure is described which provides the index of applicant "quality." Then, the rating process itself is explored using a Path Model to measure the contributions of background and achieved characteristics of applicants to their rating. How questions of bias may be raised and pursued is discussed. Applicants are profiled in segments to show how the effects of policy adjustments may be monitored. In the second section, quality-by-enrollment status segments are studied. Using factor analysis models, an analysis of image variance is applied. Next, a discriminant analysis serves to isolate those aspects of the university which, if adjusted, might most influence higher quality applicants to enroll. Some specifics of a differentiated policy are given in examples. Implications of this integrated approach are discussed.

ERIC No. HE 012 858

7H(19) *PERCEPTION: IS IT JUST IN THE MIND OF THE BEHOLDER?*

AMI MEGANATHAN, Planning Associate, Carnegie-Mellon University

A prerequisite for any marketing strategy is accurate knowledge about what prospective students want. Student perception, expectations, and evaluations are related to inquiry, applications, college choice, academic achievement, and attrition. Carnegie-Mellon University (CMU) has conducted extensive studies of its admitted applicants for several years as well as a few studies of its non-applicants. A study of CMU's graduating seniors was also conducted in 1979. Results of these studies were pooled, and students' perceptions on various factors such as reputation, faculty, and facilities of the institution were studied comprehensively. This paper compares the perceptions of several categories of students about the university, relates these to similar studies at other institutions, and discusses the issues and policy implications.

7H(20) *THE IMPACT OF STUDENT LOANS ON GRADUATE EDUCATION*

TIMOTHY R. SANFORD, Associate Director of Institutional Research, University of North Carolina at Chapel Hill

Educational loans to undergraduates may help them finance their baccalaureate degree, but such loans may discourage borrowers from attending graduate or professional school. Using 3,000 college graduates in the third follow-up of the National Longitudinal Survey of the High School Class of 1972, the relationships between loans and various aspects of graduate education were examined. Contrary to the hypothesized negative relationship between loans and attendance, the results showed a small positive correlation. While the basis for doing the study was not supported, the results are important because the lack of a negative impact of loans on students tends to support the current structure of student assistance programs.

ERIC No. HE 012 859

7H(21) *IMPROVING THE RESEARCH CAPACITY OF THE UNIVERSITIES IN SEMI-INDUSTRIALIZED COUNTRIES*

DEMETRIS DENIOZOS, Scientific Advisor, Scientific Research and Technology Agency (Greece)

The lack of indigenous research in developing, and particularly in semi-industrialized, countries is now considered a bottleneck to economic development, a fact which puts further pressure for change on the universities of these countries. Universities have been used, until now, as highly specialized teaching institutions. This paper analyzes some factors that favor or resist change. It examines the models promoted by different interest groups inside and outside universities and makes suggestions for a strategy which will contribute to the development of research and postgraduate studies in the universities.

ERIC No. HE 012 860

7H(22) *IMPACT OF DEVELOPMENTAL EDUCATION PROGRAM ON STUDENT PERFORMANCE*

KIRK F. MINNICK, Statistician II, Testing Division, University of New Mexico
HERTA TEITLEBAUM, Assistant Dean, University College, University of New Mexico

This paper reports on the effectiveness of a basic skills program instituted in the fall of 1979 at the University of New Mexico. Freshmen falling below specified ACT cut-off levels were placed in developmental courses in English, mathematics, social studies, and natural science, which they had to complete successfully before being eligible to enroll in freshman classes in the area of their deficiency. Analysis and discussion in this paper is limited to the social studies and natural science portions of the program. The courses were designed primarily to raise students' ability to read, analyze, and evaluate social studies or natural science materials and only secondarily to enhance knowledge in a particular subject.

In the first part of the analysis, the pre/post-test changes of students who passed a social studies or natural science basic skills course are described, with particular emphasis on students' growth in skills and content areas assessed by a standardized test. Secondly, through covariance analysis, the individual departments which taught the basic skills courses are compared to determine whether they were equally effective in raising students' skills, which was the fundamental goal of the program.

ERIC No. HE 012 861

7H(23) *ASSESSING THE EFFECTIVENESS OF DEVELOPMENTAL STUDIES PROGRAMS*

RICHARD G. DUMONT, Coordinator, State Board of Regents Basic Skills Evaluation Program, Tennessee Technological University
CARLA JACKSON, Director of Institutional Research, Columbia State Community College
ALBERT BEKUS, Director of Developmental Studies, Austin Peay State University

A pilot study to assess the effectiveness of developmental studies programs at two institutions of the State University and Community College System of Tennessee is described. The project is designed to evaluate the outcomes of developmental programs in reading, composition, and mathematics at a community college and a regional university using a multiple-indicator strategy with pre- and post-testing on both objective performance and student testimony data. Comparison to appropriate control groups is also a distinctive characteristic of the evaluation strategy. Although the analysis of data collected during the initial year of the project is incomplete, it is expected that the findings from the pilot project will have significant implications for the assessment and improvement of developmental studies programs.

7H(24) *INTEGRATING THE TECHNICAL AND THE POLITICAL: THE CASE OF AN ASSESSMENT OF EDUCATIONAL INFORMATION SERVICE ADEQUACY IN OREGON*

MARY K. KINNICK, Educational Consultant (Portland, Oregon)
(Paper presented by Don E. Gardner, Director of Institutional Research, Portland State University.)

Too often, policy makers are confronted with results from evaluation studies which prove of little use in policy deliberations. The purpose of this paper is to share information about several evaluation strategies used in a 1979 assessment study in Oregon designed to assist staff and members of the Oregon Educational Coordinating Commission (OECC) with a particular policy decision.

A multi-form, multi-method, and multiple-audience assessment strategy was used in an effort to account for both the technical and the political dimensions of the study. The assessment featured in-mail surveys, interviews, extensive use of secondary sources of data, identification of important environmental factors which might affect future educational information and counseling service development in Oregon, a specification of study limitations, and a final working conference where preliminary assessment findings were reviewed and debated.

The author concludes that evaluation studies, by definition, must often risk a certain degree of "messiness" if eventual use is to be maximized. She argues that the vision of the evaluator in an uncluttered setting where everything is neatly quantifiable is archaic, if it ever worked. A deliberate and careful integration of the technical and the political are said to make the difference between a useful and a relatively useless evaluation product.

ERIC No. HE 012 862

7H(25) *A GRAPHIC ANALYSIS OF THE INSTRUCTIONAL SERVICE FUNCTION OF ACADEMIC DEPARTMENTS*

DONALD J. REICHARD, Director, Office of Institutional Research, University of North Carolina at Greensboro
ERNEST A. LUMSDEN, Assistant Dean, College of Arts and Sciences, University of North Carolina at Greensboro
ROBERT L. MILLER, Dean, College of Arts and Sciences, University of North Carolina at Greensboro

A modified form of vector analysis was applied to graphs depicting the number of undergraduate student credit hours taken by majors and non-majors in each of eighteen arts and sciences departments. The analysis permitted the identification of instructional service strategies adopted by various academic units and the evaluation of the impacts of curricular reform. Analyzing Induced Course Load Matrix (ICLM) data in this manner reduces information overload and perceptual roadblocks to the use of ICLM data. Changes in the instructional service function that have occurred across a four-year period within each department and differences in instructional service across departments during a single year become more easily understood.

ERIC No. HE 012 863

7H(26) *A STRUCTURAL EQUATION MODEL TO PROJECT AN INSTITUTION'S MULTIVARIATE TIME SERIES OF STUDENT APPLICANT DATA*

NEIL H. TIMM, Director, Information Systems Planning, University of Pittsburgh

In institutional research, multivariate time series of data over several terms or years are not uncommon. In addition, the separate dependent series are often related by a hierarchical nonrecursive system of simultaneous linear equations. The problem confronting the institutional

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researcher is to develop a model to project the stationary multivariate time series, employing a multivariate set of exogenous variables. Obtaining three years of data on applicants, matriculated students, and registered students—a multivariate time series in three endogeneous variables—a hierarchical nonrecursive model is developed to project the series, employing a set of exogenous variables.

7H(27) *(withdrawn)*

7H(28) *ASSESSING FINANCIAL DISTRESS IN COLLEGES AND UNIVERSITIES*

DOUGLAS J. COLLIER, Senior Associate, National Center for Higher Education Management Systems (NCHEMS)

The results of two years' work on the development of indicators of institutional financial condition are described. Two critical problems must be solved before meaningful indicators can be developed: the definitional problem and the validation problem. A solution to the definitional problem is essential if the users of financial condition indicators are to know what they are measuring; very little has been done in past studies to solve the definitional problem, and ways of solving it are recommended in this paper. The validation problem occurs when indicators are postulated without proof that they actually do measure financial distress. The paper describes the dimensions of the validation problem and recommends ways of dealing with it.

7H(29) *ENROLLMENT FORECASTING WITH DOUBLE EXPONENTIAL SMOOTHING: TWO METHODS FOR OBJECTIVE WEIGHT FACTOR SELECTION*

DON E. GARDNER, Director of Institutional Research, Portland State University

The merits of double exponential smoothing are discussed relative to other types of pattern-based enrollment forecasting methods. The basic assumptions and formulas for its use are outlined. The difficulties associated with selecting an appropriate weight factor are discussed, and their potential effect on prediction results illustrated. Two methods for objectively selecting the "best" weight factor are described and analyzed, and evidence is presented suggesting they may be used effectively in the enrollment-forecasting process.

ERIC No. HE 012 864

7H(30) *THE ROLE OF AN INSTITUTIONAL RESEARCHER IN RETENTION: A COMMUNITY COLLEGE EXAMPLE*

JANIS H. WEISS, Coordinator of Institutional Research, North Hennepin Community College

When retention efforts begin, most committees assigned to investigate the issue turn to the institutional research office for help. Two studies of withdrawing and non-reenrolling students are presented. The office can assist in two further areas. First, it can help the committee determine why students stay. Second, it can provide guidance in organizing the literature on this subject and in developing programs to cope with the problem. A model survey of students who stay is discussed, and a model for organizing retention information and programs is presented.

8H(1) *THE INFLUENCE OF A LIVING–LEARNING EXPERIENCE ON SELECTED FRESHMAN-YEAR EDUCATIONAL OUTCOMES*

PATRICK T. TERENZINI, Director of Institutional Research, SUNY at Albany

ERNEST T. PASCARELLA, Associate Professor of Education, University of Illinois at Chicago Circle

After controlling for pre-college differences, freshmen residents in a living–learning center were more likely to continue their enrollment and to report comparatively greater progress in their intellectual and personal development than were other freshmen. Results indicate that the center's influence is different for different kinds of students and that residents' interpersonal relations with faculty and peers may mediate the organizational and programmatic influences of the center. Results offer at least partial justification for the higher-than-average costs of such education programs, and the study's design may be something of a model for assessing the educational outcomes and effectiveness of such programs.

8H(2) *REFUND POLICIES AND PRACTICES AT COLLEGES AND UNIVERSITIES*

FRANK J. ATELSEK, Director, Higher Education Panel, American Council on Education
IRENE L. GOMBERG, Assistant Director, Higher Education Panel, American Council on Education

A stratified sample of the nation's colleges and universities was queried about their policies related to refunding tuition and fees of entering freshmen who withdraw prior to completion of the term. The survey's principal findings relate to charges for tuition, fees, room and board for the fall 1978 term and the percentage refund allowed at three different points in time. Other areas of investigation include methods of communicating tuition refund policies and procedures, participation in and responsibility for policy revisions, time of last policy review, and the existence of an established procedure for appealing unfavorable refund decisions.

8H(3) *PERSISTENCE AND ACADEMIC SUCCESS AMONG NONTRADITIONAL-AGE STUDENTS AT A JUNIOR COLLEGE*

LINDA R. GREER, Director of Institutional Research, Clayton Junior College

This paper reports the results of three studies of differences between traditional and nontraditional-age students. In the first two studies, discriminant analyses were used to determine the influence of age relative to other entering characteristics on persistence and academic success. Age was found to be negatively related to persistence for students in the regular academic program and positively related for those in the developmental program. The results of the third study, in which discriminant analysis was used, indicated that older students differed from their younger counterparts in relation to entering goals, levels of goal commitment, and expectations for college experiences.

ERIC No. HE 012 865

8H(4) *MEASURES AND PREDICTORS OF EDUCATIONAL GROWTH WITH FOUR YEARS OF COLLEGE*

RICHARD G. DUMONT, Professor of Sociology, Tennessee Technological University
RICHARD L. TROELSTRUP, Associate Professor of Psychology, Tennessee Technological University

The educational progress of students, as measured by the subtests of the American College Testing Program (ACT) between the freshman and senior years, is analyzed. The sample of 112 seniors, selected by random stratified sampling, was representative of the sex ratio, grade point average, and field of study of their medium-size, multipurpose state university. Factors of major field of study, number of quarter hours completed in a discipline, and grades earned in that discipline served as some of the predictors of the pattern of gain scores. The paper also addresses a number of methodological problems with this type of study.

ERIC No. HE 012 866

8H(5) *FACULTY USES OF DOCTORAL RESEARCH TRAINING: A TECHNIQUE FOR THE DIFFERENTIATION OF FACULTY BEHAVIOR*

JOHN BRAXTON, Research Associate, Institutional Studies and Planning, Northeastern Illinois University
WILLIAM TOOMBS, Professor of Higher Education, Center for the Study of Higher Education, Pennsylvania State University

A powerful technique is outlined for the differentiation of activities, other than publication, which build on research skills and analytical capabilities acquired through doctoral research training. The premise for this technique is that the use of scholarly publications as a proxy measure of research performance has oversimplified professional practice and has prevented the identification of a large share of faculty activities which also utilize doctoral research training. The results of a research project indicate that such activities have validity and are grounded in faculty practice. This approach has uses both in studies of research performance and in evaluation of faculty.

8H(6) *THE IDENTIFICATION AND REMEDY OF FACULTY SALARY INEQUITY: A CASE STUDY*

JOHN E. NANGLE, Associate Director of Institutional Research, Western Michigan University

A joint committee was created through a labor agreement to discover and deal with salary inequities. An operational definition of inequity and a viable means of treating that inequity were developed. Selected characteristics and salaries for 865 bargaining unit faculty were analyzed using a multiple regression model. The variables found to account for 91.2% of salary variance were these: rank, years in rank, highest degree, years since degree, and a market factor. A regression equation was used to generate predicted salaries which were compared to actual salaries. Differences were the basis for indicating inequity. Faculty were identified for further review, with 260 receiving adjustments totaling $125,000.

8H(7) *SUPPLY AND DEMAND STUDIES OF DOCTORATES: IMPLICATIONS FOR INSTITUTIONAL PROGRAM REVIEW AND REALLOCATION DECISIONS*

NORMAN KAUFMAN, Senior Staff Associate, Western Interstate Commission for Higher Education (WICHE)
BARBARA KRAUTH, Staff Associate, Western Interstate Commission for Higher Education (WICHE)
DENNIS VIEHLAND, Research Assistant, Western Interstate Commission for Higher Education (WICHE)

The research and popular literature abound with studies of the putative oversupply of Ph.D.s and follow with a number of prescriptions for alleviating the problem. Chief among these is the call for institutions to strengthen programs which have good employment prospects for graduates at the expense of other graduate programs. In the absence of national approaches to manpower planning, this tack is likely to prove inadequate as a guide to institutional programmatic decisions and is likely to cause great dislocations without corresponding benefits to the graduate or institution. This paper provides empirical evidence to support these assertions, based on longitudinal data on recent Ph.D.s, and offers several alternative criteria for graduate program review and allocation decisions.

8H(8) *(withdrawn)*

8H(9) *(withdrawn)*

8H(10) *AN ECONOMETRIC ANALYSIS OF UNIVERSITY MARKET SHARES*

GERALD R. THRASHER, JR., Director of Institutional Research, Eastern Michigan University

To determine what has caused Eastern Michigan University's share of the Michigan public, four-year market to rise and then fall over the period 1960–1978, a regression was estimated which revealed that Eastern was not affected differently than other public, four-year institutions by the unemployment rate. The military draft had a positive effect on Eastern's share, perhaps because teachers, Eastern's major degree group, were draft exempt. The community college share of the total headcount was also significant, implying that two-year colleges widen the market for students and, thereby, increase Eastern's enrollment through transfers. While the importance of the market for teachers was confirmed, relative price was not significant.

8H(11) *FACULTY VITALITY GIVEN RETRENCHMENT—A POLICY ANALYSIS*

EDWARD A. BRUSS, Assistant Director, Planning Office, Case Western Reserve University School of Medicine
KENNETH L. KUTINA, Associate Dean for Planning and Administration, Case Western Reserve University School of Medicine

Facing a future of static or declining funding available for faculty salaries, higher education management must evolve strategies to enable their institutions to avoid stagnation of their most prominent and essential resource—the institution's faculty. This task is especially complex in the health sciences because of the existence of two distinct faculty cohorts, each with unique organizational characteristics. A simulation model designed to embody this duality is used to assess a variety of policies, both individually and in combination. The authors propose guidelines for health science school administrators in formulating policies to help maintain faculty vitality given severe resource constraints.

ERIC No. HE 012 867

8H(12) *ECONOMIC IMPACT ON POSTSECONDARY ENROLLMENT: AN ANALYSIS OF DECLINING PARTICIPATION RATES*

SHEPARD BRAUN, Academic Analyst, Office of Institutional Research, University of Calgary
CRAIG J. GREENHILL, Academic Analyst, Office of Institutional Research, University of Calgary

Declining university enrollment comes at a time when the 18- to 20-year-old population has yet to peak. The problem is, therefore, one of declining participation rates. Analysis undertaken for the Alberta Universities Coordinating Council has attempted to counter the prevailing view that universities have lost enrollment to the colleges. A subsequent study to examine the factors at work in determining participation has been proposed. Conventional wisdom indicates that the oil-based boom in Alberta is so attractive to young people that they go to work rather than university. Just as the earlier prevailing view was found to be unfounded, the economic impact on postsecondary enrollment in Alberta still remains to be seen.

8H(13) *A "TRAINING OPPORTUNITIES" MODEL FOR PREDICTING ADVANCED DEGREES IN THE SCIENCES*

JOHN A. MUFFO, Director of Institutional Research, Cleveland State University

This study shows how a modified "training opportunities" approach to the prediction of number of graduate enrollments and degrees at a large university can be employed using multiple regression. Readily available data concerning graduate assistantships and faculty staffing levels were utilized to predict, with a high level of accuracy, the number of graduate enrollments and degrees. Possible impacts upon institutional, regional, and national policy are discussed, as are the other major theories of graduate manpower planning: the market, demographic, and credentialist approaches.

ERIC No. HE 012 868

8H(14) *A COMPARISON OF TWO COST ALLOCATION MODELS FOR UNIVERSITY HEALTH CARE OPERATIONS*

DANIEL P. SHOEMAKER, Assistant Professor, Michigan State University
THOMAS J. PALMER, Specialist, Office of Institutional Research, Michigan State University
SHAHRIAR GHODDOUSI, Graduate Assistant, Michigan State University

Indirect expense is a major expense area in a university health care operation. Containment of these costs depends on the ability of the organization to allocate them in an appropriate fashion to the units responsible for their generation. This study tests the hypothesis that standard means of attributing indirect costs will perpetuate inefficient modes of operation. An alternative model for cost allocation is proposed which shapes cost behavior into a more efficient form of operation. Using this input/output model of cost allocation, it is possible to identify inefficient operations and take steps to bring these units into fiscal balance.

8H(15) *A COST/PRODUCTIVITY PROFILE OF ACADEMIC PROGRAM COSTS AT A SMALL TRADITIONALLY BLACK STATE LAND GRANT UNIVERSITY*

ANWAR KHAN, Coordinator, Institutional Research, Lincoln University
JEANNE E. BUDIG, Director, Planning and Analysis, Lincoln University

This paper reports a study at a small, public university on the cost/productivity of academic program clusters in fall 1979. Five cost indicator ratios were determined and rank-ordered profiles were prepared for each discipline cluster. Computation of a mean z-score, $\bar{z}$, permitted each discipline cluster to see its relative placement with respect to all other disciplines. The study was designed to provide graphic cost/productivity data to academic decision makers under conditions of a very limited data base. It was not intended to be a definite cost analysis but rather to aid in promoting discussion and identifying gaps and weaknesses in the data base as well as to assist with academic planning and decision making.

ERIC No. HE 012 869

8H(16) *USES OF NATIONAL DATA SYSTEMS BY INSTITUTIONAL RESEARCHERS: IMPLICATIONS FOR THE 1980s*

KENNETH G. BROWN, Senior Analyst, Center for the Study of Higher Education, University of Arizona
DAVID W. PADGETT, Research Analyst, Center for the Study of Higher Education, University of Arizona
LOWELL R. EMBRY, Director of Student Personnel, University of Louisville

This paper describes technical and operational problems encountered when working with national data systems and discusses ways in which these data files may be used by institutional researchers as a source of comparative data. Technical problems involved in converting the enrollment, finance, and employee data tape files supplied by HEGIS into working files are described. The operational problems encountered in the merged 1965–1977 Opening Fall Enrollment file and their solutions are also discussed in detail. An enrollment projection project at the Center for the Study of Higher Education at the University of Arizona provides an example of the use of HEGIS data files in testing several enrollment projection models.

ERIC No. HE 012 870

8H(17) *THE OFFICE MINICOMPUTER: THE POTENTIAL FOR INSTITUTIONAL RESEARCH*

JOHN Wm. RIDGE, Director of Institutional Studies, University of Wisconsin-Eau Claire

The impressive increase in the ratio of performance to cost of multipurpose minicomputers has created the potential for an office of institutional research to provide constructive leadership into the next generation of the "managerial revolution in higher education." Many potential applications are suggested within the areas of executive management information support, office automation, management information centers, and office project management. The need and the potential for integrating the minicomputer into ongoing operations is stressed. Suggestions for leadership activities are made for both individual institutional researchers and the Association for Institutional Research.

8H(18) *A MODEL FOR ALUMNI PARTICIPATION IN STUDENT RECRUITMENT*

DOROTHY E. HABBEN, Associate Professor of English, St. John's University
CLIFFORD T. STEWART, Dean of Academic Affairs, Adelphi University

This paper presents a model for constructing and evaluating an effective alumni volunteer program to aid the student recruitment effort. A review of successful programs reveals certain common features and provides important touchstones for other schools looking for the principles and practices with which to organize their own efforts. The first section outlines the goals of alumni recruitment programs and suggests methods for attracting volunteers. This is followed by a description of a formal recruitment program, including the tasks assigned to volunteers. The final portion of the paper presents several ways to evaluate the success of these programs.

ERIC No. HE 012 871

8H(19) *THE ROLE OF INSTITUTIONAL RESEARCH IN RECRUITMENT MARKETING AT A PRIVATE LIBERAL ARTS COLLEGE*

MILTON E. PETERS, Director of Institutional Research, Findlay College
JAMES R. DIDHAM, Assistant to the President, Findlay College

In order to evaluate and improve the utilization of recruitment resources, an in-house market analysis was employed to determine which resources influenced prospective students to matriculate to a small, private, liberal arts college. The responses of inquirers, applicants (matriculating and non-matriculating) and matriculators were compared on such factors as the perception of the college relative to other colleges, recruitment procedures, and college literature. The prospects' college choice priorities were identified and a model developed to recruit students utilizing their priorities. The use of the market research findings by the admissions staff is discussed.

ERIC No. HE 012 872

8H(20) *A TRACKING ASSESSMENT STUDY OF ADULT EDUCATIONAL NEEDS IN ATLANTIC AND CAPE MAY COUNTIES, NEW JERSEY: A PROTOTYPE APPLICATION OF THE SCIPIONE–McDANIEL PARADIGM*

WALTER A. McDANIEL, Director of Institutional Research, Atlantic Community College
PAUL SCIPIONE, Vice President, Kenneth Hollander Associates

This study examines the stability of educational needs and preferences over time. A major finding is that there is not one "market" but a series of "market segments," each with different needs, attitudes, and other differing indices. The resultant market information system provides reliable and projectable data for planning, management, and evaluation activities. The study may very well be a prototype for the eighties.

ERIC No. HE 012 873

8H(21) *ALUMNI PERCEPTIONS OF UNIVERSITY GOALS*

BEATRICE T. MAHAN, Assistant Director, Institutional Research, Virginia Polytechnic Institute and State University
DEBORAH C. STRICKLAND, Graduate Assistant, Institutional Research, Virginia Polytechnic Institute and State University
GERALD W. McLAUGHLIN, Associate Director, Institutional Research, Virginia Polytechnic Institute and State University
JAMES R. MONTGOMERY, Director, Institutional Research, Virginia Polytechnic Institute and State University

Alumni perceptions of university goals are reviewed, based on responses of 1,833 graduates to an opinion survey. Respondents rated the amount of emphasis currently placed on a set of goals by the university as well as the emphasis which *should* be placed on each goal. With the changing values in today's society and the resistance to increased funding for higher education, institutions must reassess their goals and priorities. Alumni represent one important segment of the population whose views should be solicited and evaluated in any reassessment program.

8H(22) *MIGRATIONAL CHOICE PATTERNS IN FINANCIAL AID POLICY MAKING*

JOHN J. KEHOE, Educational Research Associate, Pennsylvania Department of Education

This study examines in-state and out-of-state choice pattern differences among students with regard to certain academic and economic variables (e.g., class standing, parental income, financial support, costs) and then examines the impact that financial aid would have upon their choice. A sample survey of 26,903 Pennsylvania public and nonpublic high school seniors illustrated the role that specific background variables play in determining locational choice. The trends and relationships that emerge provide valuable information to policy makers that can be geared to the specific economic, academic, and geographical preference characteristics of those contemplating formal studies.

ERIC No. HE 012 874

8H(23) *AN EVALUATION OF AN ACADEMIC ADVISING SYSTEM FROM THE POINT OF VIEW OF STUDENTS*

ANTHONY ANDREW HICKEY, Associate Professor, Department of Sociology, George Mason University
JO ANN HICKEY, Student, Department of Sociology, George Mason University

This paper reports part of a larger study of the use and assessment of various services and activities by students at an urban commuter university. Information was solicited on expectations of students as well as the advising services actually received. The data indicated that one-third of the students did not meet with their advisor the previous semester and that, in general, student expectations were not being met in several areas: graduation requirements, general advice, graduate school advice, and job opportunities. These findings are placed in the context of the characteristics of the advising system used at the university.

ERIC No. HE 012 875

8H(24) *THE USE OF STUDENT OUTCOMES IN PROGRAM EVALUATION*

ELIOT S. ELFNER, Associate Professor of Business Administration, St. Norbert College

This study analyzes student outcomes. Data collected from incoming students is compared with data collected the following spring from the same students. Analysis of variance, analysis of covariance, and Astin's input–output analysis techniques are used. It is concluded that input characteristics must be accounted for in evaluating the effect of program participation on student outcomes.

8H(25) *A GENERAL MODEL FOR PREDICTING STUDENT ATTRITION*

E. MICHAEL STAMAN, Assistant to the President and Director of Planning and Institutional Studies, Christopher Newport College

A model to predict student attrition from college is presented. Guidance for development of the model was selected from Tinto's theoretical model and from congruency theory. Results from questionnaires designed to measure elements of the theory were factor analyzed, and the resulting factor scores were coupled with demographic variables for subsequent entry into discriminant analyses. Variables and their coefficients suggested as significant by the discriminant analyses became the basis of the prediction formulas for the model. User-selected weights cause the model to enlarge or contract the pool of students who are predicted not to return to college, thus permitting the user to consider resources available for retention programs.

8H(26) *(withdrawn)*

8H(27) *EARLY PREDICTORS OF ALUMNI GIVING*

RANDALL W. DAHL, Coordinator, Kentucky Outcomes Project, Kentucky Council on Higher Education

This study examines the relationship between forty-seven intellective, non-intellective, and personal background characteristics of certain former students at a major public university and the magnitude of their subsequent financial contributions to the university. The study is intended to identify possible determinants and early predictors of future giving by alumni through the application of discriminant analysis and multiple regression analysis. Data for the research samples of 186 givers and 186 non-givers from the fall 1965 entering freshman class are drawn exclusively from institutional records.

8H(28) *INSTITUTIONAL MANAGEMENT IN CONDITIONS OF STRONG EXTERNAL REGULATION: HOW EUROPEAN UNIVERSITIES SURVIVE WITHOUT DESPAIR*

ANNELIESE MONIKA GRÜGER, Academic Director, Head of Planning Department, Universität Düsseldorf

As American universities encounter increasing state and federal control over their operations, they will have to manage under conditions which have characterized European higher education for many years. The paper attempts to lay groundwork for comparison of administrative processes in European and American universities. It discusses coping techniques which have been developed in European universities to deal with external/governmental limitations on institutional flexibility and illustrates with a detailed study of administrative processes in one West German institution.

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8H(29) *AN EXAMINATION OF ALTERNATIVE METHODS AND POLICIES FOR IMPROVING THE PREDICTIVE VALIDITY OF SAT SCORES AND HIGH SCHOOL RANK IN FRESHMEN ADMISSIONS DECISIONS*

DENNIS R. HENGSTLER, Evaluation Specialist, Office of Institutional Research, University of North Carolina at Greensboro

DONALD J. REICHARD, Director, Office of Institutional Research, University of North Carolina at Greensboro

A recent decline in the ability to predict first-year GPA, using the traditional regression analyses incorporating SAT and high school rank as predictors, fostered an investigation of the effectiveness of alternative procedures to predict academic success. Four procedures utilizing multiple regression analyses, multiple discriminant analyses, and quadratic analyses were investigated and compared. Each procedure is discussed in terms of policy implications for admission offices.

ERIC No. HE 012 876

8H(30) *EDUCATIONAL MATURITY, RACE, AND THE SELECTION OF A COLLEGE*

TIMOTHY R. SANFORD, Associate Director of Institutional Research, University of North Carolina at Chapel Hill

PAUL D. NAYLOR, Graduate Research Assistant, University of North Carolina at Chapel Hill

The aura of a major, research-oriented, public university may deter prospective students who are seeking a nurturing atmosphere while they explore various majors and career opportunities. Similarly, the same institution may encourage attendance by undecided applicants who see the wealth of course offerings as an opportunity to define their interests. Using a questionnaire administered to 3,500 entering freshmen in fall 1979 at the University of North Carolina at Chapel Hill, this study examines the effects of educational maturity (certainty of educational plans) upon the traditional college choice model. Given the general educational disadvantages of minority students, the interaction between race and educational maturity and the resulting influence upon selection of college are also explored.

ERIC No. HE 012 877

10A (see Session 1A)

10B CALIFORNIA ASSOCIATIONS FOR INSTITUTIONAL RESEARCH (CAIR, SCCCIRA, NCCCIRA) (special interest group)

ROBERT T. LITTRELL (convener), Director of Institutional Research, California State University, Long Beach

The California Association for Institutional Research (CAIR) met jointly with the Southern California Community College Institutional Research Association (SCCCIRA) and the Northern California Community College Institutional Research Association (NCCCIRA).

10C DEALING WITH STUDENT RETENTION AND MARKETING (workshop)

E. JAMES MAXEY (co-presenter), Assistant Vice President and Director of Institutional Services, American College Testing Program (ACT)

MICHAEL J. VALIGA (co-presenter), Program Specialist, Institutional Services Unit, American College Testing Program (ACT)

G. EMERSON TULLY (co-presenter), Professional Associate, Tallahassee Office, American College Testing Program (ACT)

RAY A. MUSTON (co-presenter), Associate Dean for Academic Affairs, University of Iowa

PHILIPPE OLIVIER (co-presenter), Program Associate, International Programs Department, American College Testing Program (ACT)

With declining enrollments predicted for colleges across the country, increasing emphasis is being placed on recruiting students, monitoring their progress, and retaining them in the institution. This workshop dealt with the relationship of adequate student-related information to the marketing and retention efforts of colleges. During the workshop, the presenters described the rationale for and potential uses of four newly developed survey instruments dealing with student attrition, student opinion, and alumni follow-up. Data from colleges that have made use of these instruments were presented briefly and interpreted. A student retention/student information model for colleges was also discussed. Sample sets of the new instruments were made available to all workshop participants.

10D THE NEW CLASSIFICATION SYSTEM OF INSTRUCTIONAL PROGRAMS FOR EDUCATION: ITS IMPACT ON DATA COLLECTION ACTIVITIES AND RESEARCH IN POSTSECONDARY EDUCATION (i.e. HEGIS) (special interest group)

PAUL F. MERTINS (presenter), College Surveys Branch, National Center for Higher Education Statistics (NCES)

KEN SAUER (presenter), Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)

JOE L. SAUPE (panelist), University Director of Institutional Research, University of Missouri

This session presented an overview of the new classification system, the need for it, and the methodology behind it. A discussion followed the presentation, focusing on the proposed changes in HEGIS as a result of the new system and the impact they will have on researchers. Questions from the audience were also addressed.

10E (see Session 1E)

10F SMALL COLLEGE GOALS INVENTORY: ITS DEVELOPMENT AND USE (workshop)

ELDON PARK (co-presenter), Program Director, College and University Programs, Educational Testing Service (ETS)

NANCY BECK (co-presenter), Acting Director of Institutional Research, Program for Higher Education, Educational Testing Service (ETS)

RICHARD E. PETERSON (co-presenter), Senior Research Psychologist, Educational Testing Service (ETS)

EDWIN J. POTTS (co-presenter), Director of Institutional Research, Westmont College

The Small College Goals Inventory (SCGI) was developed and field tested during the past two years by Educational Testing Service (ETS) and the Task Force on College Goals and Climate of the Council for the Advancement of Small Colleges (CASC). This workshop included coverage of the goal-setting process, the development of SCGI, processing and reporting services, the Summary Data Report, and comparative data. Special emphasis was placed on the question of how colleges use SCGI in their accreditation self-studies and long-range planning activities.

10G COMPUTERIZED PREFERENCE REGISTRATION AND DATA COLLECTION (workshop)

MARY ALYCE ORAHOOD (co-presenter), Assistant Director of Institutional Studies, University of Arkansas at Little Rock

G. L. MEARS (co-presenter), Director of Institutional Studies, University of Arkansas at Little Rock

JOHN P. ORAHOOD (co-presenter), Director of Computing Services, University of Arkansas at Little Rock

This workshop provided live, on-line, hands-on experience in computerized registration and data collection with emphasis on utilization of student information for management decision making as well as reporting. The system demonstrated is currently operational at the University of Arkansas at Little Rock.

11A MAJOR RESEARCH UNIVERSITIES (MRU) (special interest group)

MARK MEREDITH (coordinator), Director of Institutional Studies, University of Colorado

This special interest session allowed participants to share major research university problems, concerns, and methods of dealing with issues. Background topics included (1) overview of MRU characteristics and special concerns, (2) limitations to proper portrayal of MRUs in comparative data, (3) impact of research upon institutional activities and accounting, (4) effect of diversity among institutions in generating and interpreting "comparable" data. Data on expenditures, students, degrees, and programs were presented for the top 100 U.S. universities. Implications of A-21 requirements for faculty activity reporting and ways of achieving report needs were described. Other topics needed further discussion.

11B CANADIAN INTEREST GROUP (special interest group)

ERIC A. HILLMAN (convener), Academic Analyst, Office of Institutional Research, University of Calgary (Alberta)

A presentation by Gerald A. Schwartz, Executive Director, Universities Council of British Columbia, provided an opportunity for discussion of a common institutional research puzzle—how data produced and submitted becomes translated into decisions, decisions ostensibly based on just those data. The presentation introduced some environmental perspectives in an attempt to explain the dilemma of the title. Firstly, there is the internal or institutional view, with which one is usually more familiar; then, there is the perspective of society as a whole which will certainly influence decisions; and there is one's intimate knowledge of these factors which will vary greatly with personal experience. Finally, there are the political realities, likely to be the most unpredictable and least understood, but often the most profound, in influencing decision makers. The intent of the presentation was to analyze each of these parameters in order to illustrate some of the "hows" and "whys" in the conflict between data produced and decisions proclaimed.

11C SMALL PRIVATE INSTITUTIONS (special interest group)

GERALD H. LUNNEY (convener), Director of Research, Council of Independent Kentucky Colleges and Universities

This session explored the possibility and advisability of establishing a formal AIR special interest group for small, private colleges. Several aspects of this question were considered: the purpose of such a special interest group, its mission, how it might attract members, and the nature of information to be shared. An important question to be considered was whether the potential membership of such an SIG could afford to contribute to an active organization. The consensus of the group was that all services and potential benefits of the group should be pursued, and a steering committee was selected to advance this end.

11D NORTHWEST REGIONAL INTEREST GROUP (special interest group)

GARY A. RICE (convener), Dean, Information Systems and Planning, Yakima Valley College

This meeting served as a focal point to marshall the northwest institutional research personnel into an organized body. George A. Pierce, Director of Planning, Seattle University, spoke on the topic "Goals and Objectives of NWAIR," a presentation of the aims and projected activities of a new northwest regional group.

11E HEALTH AFFAIRS (special interest group)

J. STEPHEN SMITH (convener), Assistant Vice President for Health Affairs, University of Alabama in Birmingham

Participants in this session discussed items of mutual interest, including opportunities for sharing between or among different professional groups interested in health program planning systems and professional development.

11F INSTITUTIONAL RESEARCH IN ELEMENTARY AND SECONDARY SCHOOLS (special interest group)

THOMAS H. SATERFIEL (coordinator), Program Leader, Bureau of Educational Research, Mississippi State University

To date, AIR has directed the uses of institutional research tools at higher education institutions. However, there is considerable evidence to indicate that elementary and secondary schools can benefit from the wise use of institutional research skills in their decision-making process. This session was designed to foster the sharing of ideas concerning ways in which AIR can develop strong ties with professionals in elementary and secondary educational institutions and it focused on current institutional research activities in elementary and secondary schools.

11G TRADITIONALLY BLACK COLLEGES AND UNIVERSITIES (TBCU) (special interest group)

JAMES B. GUNNELL (co-convener), Director of Institutional Research and Planning, Virginia Union University

CHARLES I. BROWN (co-convener), Associate Professor of Education, Fayetteville State University

The theme of this session was "TBCU Institutional Research Priorities for the Eighties." In consonance with AIR's overall theme, the participants reexamined the individual and collective needs of the TBCUs, established priorities, and paired or matched institutions—in terms of 1980 needs, priorities, and resources—to work on selected projects.

12H FORUM ADDRESS AND PRESIDENTIAL ADDRESS (general session)

GEORGE BEATTY, Jr. (chair), Vice President, AIR

12H(1) *FORUM ADDRESS: CATASTROPHE THEORY: AN INTRODUCTION*

E. C. ZEEMAN, Professor, Mathematics Institute, University of Warwick (England)

(Note: Professor Zeeman's paper, CATASTROPHE MODELS IN ADMINISTRATION, *begins on page 9.)*

12H(2) *PRESIDENTIAL ADDRESS: CATASTROPHE THEORY: APPLICATIONS TO INSTITUTIONAL RESEARCH*

F. CRAIG JOHNSON, President, AIR

(Note: An edited transcript of this address begins on page 25.)

13A EVALUATION OF NEW ACADEMIC PROGRAM PROPOSALS (panel)

A. NANCY AVAKIAN (moderator), Assistant Vice Chancellor for Academic Affairs, University of Missouri-St. Louis

RAY A. MUSTON, Associate Vice President for Academic Affairs, University of Iowa

WILLIAM TOOMBS, Professor of Higher Education, Center for the Study of Higher Education, Pennsylvania State University

ROBERT A. WALLHAUS, Deputy Director for Academic and Health Affairs, Illinois Board of Higher Education

How will institutions of higher education respond to needs of students, faculty, society, and the job market? Proposing new programs assumes that additional funds will be available. Will existing programs be phased out in order to implement new programs? Will faculty, tenured or not, lose their jobs to make way for new programs? Who has the knowledge or the right to decide which programs will be maintained or which will be eliminated as the scramble for students continues? The panelists presented perspectives of the faculty, administration, and state higher education agency.

13B CRITICAL SKILLS IN INSTITUTIONAL RESEARCH (panel)

RICHARD D. HOWARD (moderator), Director of Institutional Research, West Virginia University
JOHN S. CHASE, Director, Office of Analytical Studies, Simon Fraser University
JULIA M. DUCKWALL, Graduate Student, Florida State University
R. SUE MIMS, Director, Office of Academic Planning and Analysis, University of Michigan
ALTON L. TAYLOR, Professor and Director of Summer Session, University of Virginia
LOIS E. TORRENCE, Director of Institutional Research, University of Connecticut

As some form of organized institutional research has developed in virtually all colleges and universities in the United States and Canada, the staffing and functions of institutional research offices seem to have developed in institutionally specific ways. If this is, in fact, true, the answer to the question, What are the critical skills needed to be a successful institutional researcher? would also seem to be institutionally specific. This panel addressed the question of needed critical skills for institutional research from the perspectives of two directors, one newly appointed and one a veteran. In addition, the results of a national survey were presented and discussed.

13C INDICES OF MODEL INSTITUTIONS (contributed papers)

ROBERT WINTER (chair), Assistant Vice President, University Office for Planning and Budgeting, University of Illinois
FRANK A. SCHMIDTLEIN (reactor), Director, Academic and Financial Planning, Maryland State Board for Higher Education

13C(1) *QUALITATIVE AND CONVENTIONAL INDICES OF BENCHMARK INSTITUTIONS*

JOHN C. SMART, Professor of Higher Education, University of Kentucky
RANDEL O. MARTIN, Doctoral Candidate, University of Kentucky
CHARLES F. ELTON, Professor of Higher Education, University of Kentucky

There has been a growing use of benchmark or peer institutions by campus officials in their efforts to justify current funding and expenditure patterns. The conventional practice has been to select benchmark institutions on the basis of simplistic size measures and abstract notions of comparable purposes. This paper develops an index of benchmark institutions for ninety-eight research universities based on both conventional measures and indicators of the academic program quality of the research universities. The inclusion of qualitative indicators is important if the use of the benchmark concept is to guide the informal redirection of resources for institutional renewal.

ERIC No. HE 012 878

13C(2) *AN IMPROVED, OBJECTIVE ALGORITHM FOR CLASSIFYING POSTSECONDARY INSTITUTIONS*

ROLF M. WULFSBERG, Assistant Administrator for Research and Analysis, National Center for Education Statistics (NCES)
DAVID J. MAKOWSKI, Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)

The summarization and comparison of information about postsecondary education requires meaningful groupings of institutions. The authors present a new classification of postsecondary institutions which improves upon earlier taxonomies developed by the Carnegie Commission, the National Center for Education Statistics, and the Federal Interagency Committee on Education. The paper evaluates the new taxonomy, reviews its special attributes, and examines the efficiency of the new system for use as a sampling stratification device.

13D STUDENT ATTRITION (contributed papers)

OSCAR T. LENNING (chair), Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)
GERALD R. KISSLER (reactor), Associate Director of Planning, University of California, Los Angeles

13D(1) *DROPOUT RATES: A LONGITUDINAL ANALYSIS OF STUDENT LOAN USERS COMPARED WITH USERS OF OTHER FORMS OF FINANCIAL ASSISTANCE*

KENNETH G. BROWN, Senior Analyst, Center for the Study of Higher Education, University of Arizona

The purpose of this paper was to investigate dropout rates with a special emphasis on comparing loan users with users of other forms of aid. The financial-aid groups used were loans only, loans in combination with other aid, other aid only, and familial aid only. Differences in dropout rates for students in the several financial-aid groups were analyzed using ANOVA. The variables socioeconomic status (SES), ability, grade-point average, and parental income were used in these ANOVAs as blocking factors to obtain separate estimates of dropout rates for categories of these variables and to test for differences in these rates. These analyses were accomplished for the academic years 1972, 1973, and 1974 and thus allow longitudinal estimates for the dropout rates. Data for these analyses were extracted from the National Longitudinal Study of the High School Class of 1972. When dropout rates of various financial-aid groups are compared for the years examined in this study, it is evident that the first year of schooling is critical. Dropout rates were higher in the first year than in the following two years and the type of aid used in the first year seems to have an effect not indicated by the analyses of later years. Students relying on loans only or familial aid only had higher dropout rates than students using loans in combination with other types of aid. This phenomenon appears to affect levels of SES differentially. Low SES students had higher dropout rates when relying exclusively on loans or on familial aid than did high SES students.

ERIC No. HE 012 879

13D(2) *INVOLVEMENT IN ACADEMIC AND SOCIAL ACTIVITIES AND ITS RELATIONSHIP TO STUDENT PERSISTENCE: A STUDY ACROSS INSTITUTIONAL TYPES*

RUSSELL H. JOHNSON, Assistant Director, Project CHOICE, University of Michigan
DAVID W. CHAPMAN, Associate Director, Project CHOICE, University of Michigan

Student attrition is an issue of major importance for many postsecondary institutions. This paper reports the findings of a nationwide study that investigated the relationship of student involvement in campus activities (both academic and social) and student attrition.

13E LIBRARY ACQUISITION AND RESOURCE ALLOCATION MODELS (contributed papers)

SUZANNE W. LARSEN (chair), Associate Director of Institutional Research, University of Tennessee
DONALD M. NORRIS (reactor), Director of Institutional Studies, University of Houston

13E(1) *TOWARD A PERIODICAL AND MONOGRAPH PRICE INDEX*

CHARLES H. BELANGER, Director of Institutional Research, Université de Montréal
LISE LAVALLEE, Research Economist, Université de Montréal

This paper is aimed at examining the various steps and intricacies involved in tailoring a periodical and monograph price index to a university library, and at raising a number of issues librarians are wrestling with in an attempt to balance their acquisition budgets. The authors describe the difficulties involved in applying a simple methodology such as a price index when the data base has not been organized to play an active role in the decision-making process. Findings related to the shifting of library funds from books to periodicals, the price increase differential between domestic and foreign titles, and prices paid by the library and those advertised by publishers are presented.

ERIC No. HE 012 880

13E(2) *STATE-LEVEL LIBRARY ACQUISITIONS RESOURCE ALLOCATION MODEL*

JOSEPH J. GEIGER, Assistant to the Vice President for Administration (University System Office), University of Colorado

VIRGINIA FEAGLER, Associate Director for Institutional Analysis, Colorado State University

Traditional academic library acquisitions formulas stress absolute need for a given institution based upon numbers of faculty, students, and degree programs. Budgetary constraints have caused appropriating agencies to seek processes which equitably allocate state monies to institutions of higher education. A state-level library acquisitions model is described and the results of a two-year implementation by the state appropriating agencies are analyzed. The model employs a simultaneous quantitative (two-digit HEGIS) approximation of campus role and mission with respect to the roles and mission of all other campuses in the state. Acquisition costs are determined, and a process is developed for full or partial funding of each campus' need without disrupting the overall relative needs of all campuses. A method of maintaining the model is presented.

ERIC No. HE 012 881

13F **THE QUANTITATIVE AND QUALITATIVE MEASURES OF INSTITUTIONAL EFFECTIVENESS** (seminar)

GLENN G. THOMAS (chair), Dean of Arts and Sciences, Georgia State University

GLORIA SHATTO, President, Berry College (Georgia)

NORMAN P. UHL, Associate Vice Chancellor for Research, Evaluation, and Planning, North Carolina Central University

Offices of institutional research have been charged with presenting "datamation," not information; placing their faith in fashionable formulas which hide rather than illuminate the mosaic of the institution; assiduously avoiding formulations while credibility corrodes; and claiming neutrality when nullity is closer to reality. Are institutional researchers only unthinking middlemen between computers and policy makers? Should they adopt an analytic mode in which value judgments and exploration of alternatives are the norm? These issues were addressed in this discussion of the quantitative and qualitative dimensions of institutional research as they relate to the measurement of institutional effectiveness.

13G **PLANNING REVISITED: OUTCOMES ONE YEAR LATER** (panel)

MARTHA M. HINMAN (moderator), Senior Research Associate, Office of Academic Planning and Analysis, University of Michigan

JOSEPH E. CAMPBELL, Administrative Assistant, Office of Institutional Research and Planning, New Jersey Institute of Technology

WILFRED HOWSMON, Provost, Manassas Campus, Northern Virginia Community College

JIMMIE R. NAUGHER, Assistant Director of Analytical Studies, North Texas State University

JOSEPH G. ROSSMEIER, Director of Planning Research and Management Services, Northern Virginia Community College

The purpose of this panel was to share the hands-on experience of four planners, all of whom began with the classic formal planning model current in higher education. The panelists represented four different types of institutions: a technological institute, a multicampus community college, a regional state university, and a public research university. The presentation focused on planning implementation and outcomes. Each presenter used the same outline in describing the institution, the planning effort, the outcomes, and the evaluation. The use of a common outline highlighted similarities and differences of the four efforts and channeled the discussion which followed.

14A MANAGEMENT PRACTICES: A MULTINATIONAL APPROACH (panel)

EDWIN R. SMITH (moderator), Assistant Vice President for Administration, West Virginia University
STEFAN D. BLOOMFIELD, Associate Director, Planning and Institutional Research, Oregon State University
JOHN CALVERT, Lecturer, Management Science, Loughborough University of Technology (England)
PAUL CARPENTIER, Head of Administration, Technical University of Denmark
CLAUDE COSSU, Maitre-Assistant, Université de Paris I
ZUHAIR WARWAR, Executive Manager, Universidade Estadual de Campinas (Brazil)

Differing environments in various countries and continents have resulted in the development of different management practices in their institutions of higher education. Members of this panel focused on these differences, especially as they relate to the planning and budgeting functions of the institutions. Panelists reviewed strengths and weaknesses of the various systems and discussed the implications for the use of alternative strategies to meet current and future needs.

14B CHANGING REQUIREMENTS FOR FEDERAL DATA COLLECTION (panel)

PAUL F. MERTINS (moderator), Chief, University and College Surveys and Studies Branch, National Center for Education Statistics (NCES)
MOLLY CORBETT BROAD, Executive Assistant to the Chancellor for Governmental Affairs, Syracuse University
JAMES A. HYATT, Acting Director, Financial Management Center, National Association of College and University Business Officers (NACUBO)
ROBERT D. NORTH, Technical Planning Officer, National Center for Education Statistics (NCES)
JANE N. RYLAND, Director, SHEEO/NCES Communications Network

The Federal Education Data Acquisition Council (FEDAC) is charged with the review of all federal agency data collection activities which require data from schools, colleges, or other education agencies. This panel discussion provided Forum participants with an opportunity to learn how the FEDAC review process operates, including the kinds of comments or statements that may influence the FEDAC decision. In addition to the executive director of FEDAC, the panel comprised members who represent constituencies affected by FEDAC decisions. They proposed ways of becoming involved in the review process (a) to aid FEDAC and (b) to attempt to protect various constituencies from unnecessary reporting burdens.

14C PROGRAM DISCONTINUANCE (contributed paper)

W. SAM ADAMS (chair), Division of Continuing Education, University of Wisconsin-Oshkosh
ROBERT J. BARAK (reactor), Director of Academic Affairs and Research, Iowa Board of Regents

14C(1) *OBSTACLES IN STATE-LEVEL PROGRAM DISCONTINUANCES: A COPING PROCESS MODEL*

GERLINDA S. MELCHIORI, Research Associate, Center for the Study of Higher Education and Office of Planning and Analysis, University of Michigan

Data from a 1979 survey of forty-six state agencies indicate that obstacles to terminating academic programs can be placed into eight categories. This paper discusses these categories of obstacles and proposes incentives and coping mechanisms which will address the needs of all actors involved in or affected by actual program closures, namely, faculty, institutions, and state agencies. The coping process model relates available mechanisms to the most effective and appropriate stage in the discontinuance process (initiation, review, decision, appeal, implementation). Coping devices displaying preventive/positive rather than punitive/negative characteristics are emphasized.

14C(2) *(withdrawn)*

14D MARKETING: INFORMATION FOR STUDENT CHOICE OF COLLEGE (contributed paper)

JAMES R. MONTGOMERY (chair), Director of Institutional Research, Virginia Polytechnic Institute and State University

PAUL JEDAMUS (reactor), Professor of Management Science, College of Business and Administration, University of Colorado

14D(1) *GUIDELINES FOR PRESENTING MORE MEANINGFUL INFORMATION (IN THE COLLEGE/UNIVERSITY MARKETING PROGRAM)*

EDWARD MARK COOPER, Assistant Professor of Marketing, Metropolitan State College

Effective marketing in higher education depends on the effective communication of information about a college to the target market. In recent years, research has concentrated on the information needed by students to make better choices. Little attention has been directed to how this information can best be presented to students to facilitate their assimilation of the material and improve their decisions. Therefore, institutions cannot adequately evaluate various ways of presenting information. Based on an empirical study of student reactions to written communications, this paper suggests guidelines for improving the dissemination of college information to prospective students. Data from various market segments were analyzed to explore the impact of selected formats and to evaluate differences by segment.

ERIC No. HE 012 882

14D(2) *(withdrawn)*

14E PERCEPTIONS INTO POLICY (contributed paper)

CAMERON L. FINCHER, (chair), Director, Institute of Higher Education, University of Georgia

JOHN D. PARKER (reactor), Director of Institutional Studies and Planning, Arizona State University

14E(1) *(withdrawn)*

14E(2) *COLLEGE ENVIRONMENT: A COMPARATIVE ANALYSIS OF UNIVERSITY OF SAN FRANCISCO SUBGROUP PERCEPTIONS AND A COMPOSITE OF SUBGROUPS' PERCEPTIONS OF OTHER PRIVATE UNIVERSITIES*

VIRGINIA HIGGINS SCHWARTZ, Director/Owner, Scriptonetics Management Research and Development, San Francisco

In a consumer society, the future of institutions of higher learning may depend on the distinctiveness of their academic service. This paper reports a study which compared the perceptions of one university's college environment with a composite of the perceptions of eighteen other private institutions; the Institutional Functioning Inventory developed by the Educational Testing Service was the main instrument. The results show that this sort of study can be used by policy makers to develop strategies for attracting faculty and students.

14F DOES COLLEGE MATTER? ASKING THE GRADUATES (seminar)

DAVID W. CHAPMAN (chair), Associate Director, Project CHOICE, University of Michigan
SIGRID HUTCHESON, Associate Director, National Project IV: Examining the Varieties of Liberal Education and Assistant to the Dean, School of Education, University of Michigan
OSCAR T. LENNING, Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)
GARY L. MODEN, Director of Analytical Research, Ohio University
JOAN S. STARK, Dean, School of Education, University of Michigan

As the need for data from graduates increases, institutional researchers will need to be familiar with the techniques and issues involved in studies of graduates as well as with a variety of ways to interpret and use these types of data. This seminar examined from four points of view the uses of data gathered through graduate surveys. The final presentation examined key issues in the design and conduct of surveys of graduates to ensure meaningful and usable results.

14G ACADEMIC PROGRAM AND FISCAL PLANNING FOR THE 1980s: THE UNIVERSITY OF WISCONSIN EXPERIENCE (seminar)

ELWIN F. CAMMACK (chair), Associate Vice President, University of Wisconsin System
ALBERT J. BEAVER, Senior Academic Planner, University of Wisconsin System
KAREN M. BECKLIN, Special Assistant to the Senior Vice President, University of Wisconsin System
EUGENE C. CRAVEN, Assistant Vice President, University of Wisconsin System
LOU TURNER ZELLNER, Senior Budget Planner, University of Wisconsin System

The purpose of this seminar was to share the approaches being taken by the University of Wisconsin System in dealing with academic program and fiscal planning issues which it faces in the 1980s. The focus was on four main areas of concern: evaluation of institutional mission; academic program review and audit; academic personnel policies and procedures; and enrollment funding and allocation alternatives, with special reference to the implications of fixed and variable costs of instruction and the differential fiscal impact of part-time student study.

15H ANNUAL AIR BUSINESS MEETING (general session)

F. CRAIG JOHNSON (chair), President, AIR

(Note: The minutes of this meeting begin on page 93.)

16A USERS OF COMPUTERS (special interest group)

DENISE STRENGLEIN (co-convener), Coordinator of Institutional Research, University of South Florida
RICHARD D. HOWARD (co-convener), Director of Institutional Research, West Virginia University
CHARLES R. THOMAS (co-convener), Executive Director, CAUSE

This was an organizational meeting to explore the possibility of establishing a formal special interest group for computer users. The results of a survey of computer use by the AIR membership were presented.

16B URBAN INSTITUTIONS (special interest group)

ALAN J. STURTZ (convener), Institutional Research Officer, University of Louisville

The urban institution is reemerging as a viable force in improving the quality of urban life. The incorporation of the Urban Grant University Act into the Higher Education Amendments of 1980, the urban thrust programs sponsored by the American Association of State Colleges and Universities (AASCU) and the National Association of State Universities and Land Grant Colleges

(NASULGC), as well as urban consortia, provide excellent opportunities for strengthening postsecondary education programs in the urban environment. The discussion, led by Jim Harrison, Executive Director of the Committee on Urban Program Universities, centered on the development of the Urban Grant Act. The involvements of *all* types of urban institutions in the grant program was mentioned. It was also brought out that AASCU and NASULGC are becoming (or currently are) involved in programs directed at urban institutions—especially those institutional programs named as fulfilling the urban mission. Continued and closer contacts with these organizations will be investigated.

16C UNIVERSITY SYSTEM OF GEORGIA COMMITTEE ON INSTITUTIONAL RESEARCH AND PLANNING (special interest group)

JOE B. EZELL (convener), Assistant Vice President, Institutional Planning, Georgia State University

16D USERS OF ANALYTICAL TECHNIQUES (special interest group)

WILLIAM L. TETLOW (chair), Director of Institutional Analysis and Planning, University of British Columbia

This session was designed to permit an informal exchange of viewpoints, experiences, institutional research applications, and suggestions among individuals who use analytic techniques from operations research, project management, and decision sciences. No formal presentations were made, and the session was conducted in a seminar mode.

16E THE VOCATIONAL EDUCATION DATA SYSTEM—THE PROCESS AND THE PRODUCT: A CASE STUDY (panel)

MOLLY CORBETT BROAD (moderator), Executive Assistant to the Chancellor for Governmental Affairs, Syracuse University
PAUL F. MERTINS, Chief, University and College Surveys and Studies Branch, National Center for Education Statistics (NCES)
GEORGE PAULSON, Associate Dean of Admissions, Joliet Junior College
ROLF M. WULFSBERG, Assistant Administrator for Research and Analysis, National Center for Education Statistics (NCES)

The 1976 Educational Amendments authorized the creation of the Vocational Education Data System (VEDS) which affects programs in many community colleges. In 1979, federal regulations sought to implement collection of the required data. This panel, comprising key people in the implementation, reviewed the process surrounding the development of VEDS, using it as a case study. This was used as the vehicle to discuss the underlying mechanisms for similar efforts and the ways in which information impacts political processes. The purpose of this presentation was to improve future efforts of national data collection by relating the information needs of governmental groups to (a) the ability of institutions to provide data and (b) the institution's own needs for information.

17A INSTITUTIONAL RESEARCH AT THE SMALL COLLEGE (panel)

GERALD H. LUNNEY (moderator), Director of Research, Council of Independent Kentucky Colleges and Universities
KAREN W. CAREY, Director of Research, Kentucky State University
DAVID J. DeVRIES, Coordinator of Information Systems, Mars Hill College
ROBERT F. GROSE, Director of Institutional Research, Amherst College
MARCIA A. STANLEY, Assistant to the Vice President for Budget and Planning, Franklin and Marshall College

The institutional research person on a small-college campus frequently works in isolation, with limited resources. Often, several activities compete for time, and the institutional researcher tends

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to define institutional research in terms of those activities in which he or she is actively engaged. Through a series of questions concerning mission, activities, structure, and impact of institutional research at the small campus, this session probed the similarities and differences which exist at various institutions—what is successful in a particular setting and what is less successful. Panelists, who represented different kinds of small colleges and had different responsibilities at their institutions, focused on a number of questions about their specific situations and, in discussion with the audience, shared experiences. An important objective was to broaden the philosophy of institutional research practitioners at small colleges as well as to lay the groundwork for increased communication between and among them.

17B ALLOCATION OF SCARCE RESOURCES IN A STEADY-STATE ECONOMY (panel)

FLETCHER F. CARTER (moderator), Director of Institutional Research, Radford University

JAMES M. ALESSIO, Data Coordinator, Virginia Council on Higher Education

GEORGE BEATTY, JR., Vice Chancellor, Business and Finance, University of Massachusetts

RICHARD M. BERRY, Study Director, National Science Foundation

EDITH H. CARTER, Statistician, New River Community College

RICHARD A. MANAHAN, Vice President for Business and Finance, Radford University

As financial resources for higher education become increasingly scarce, colleges and universities have, out of necessity, had to examine their budgeting processes in order to use available resources more effectively. Institutional budgets express in dollars the goals and priorities for institutional operation. The problem of financing higher education is closely related to the question of who controls it. This panel examined the external pressures on the budgeting process and the accomplishment of planned objectives as they relate to (a) state coordinating boards, (b) universities, and (c) community colleges.

17C COLLECTIVE BARGAINING AND FACULTY LOAD (contributed papers)

S. GODWIN WONG (chair), Special Assistant to the Vice Chancellor, University of California

MARK D. JOHNSON (reactor), Associate Coordinator for Academic Program Services, Washington Council for Postsecondary Education

17C(1) *COLLECTIVE BARGAINING AND UNIVERSITY GOVERNANCE*

AIDAN DUGGAN, Executive Secretary, Royal Irish Academy

North America has been slow to experience the impact of organized faculty on the governing process of universities. The paper analyzes the effects of trade union membership on faculty attitude to university governance, in particular on their concept of the university as an employer. The paper attempts to forecast the inevitable consequences of the growth of academic trade union activity, the factors which influence that growth, and the shift in emphasis from traditional collective bargaining areas to more fundamental issues of university governance.

ERIC No. HE 012 883

17C(2) *FACTORS IN TEACHER ASSIGNMENTS: MEASURING WORK LOAD BY EFFORT*

GERALD W. McLAUGHLIN, Associate Director of Institutional Research, Virginia Polytechnic Institute and State University

JAMES R. MONTGOMERY, Director of Institutional Research, Virginia Polytechnic Institute and State University

BEATRICE T. MAHAN, Assistant Director of Institutional Research, Virginia Polytechnic Institute and State University

ARCHER GRAVELY, Graduate Assistant in Institutional Research, Virginia Polytechnic Institute and State University

This study examines what department heads perceive to be the component parts in making assignments to faculty members. The paper argues that it is imperative to evaluate faculty resources based on effort required rather than on time devoted to given tasks. Based on a national survey of 491 department heads in twenty-five major universities in the United States, the authors investigate how department heads interpret effort required to teach classes and how this effort varies by discipline (Biglan taxonomy), by class level, by number of students, and by type of instructional technique. The results are validated against reported time expenditures from a faculty activity analysis.

ERIC No. HE 012 884

17D ENROLLMENT AND CREDIT HOUR PROJECTION MODELS
(contributed papers)

PAUL E. KUNKEL (chair), Director of Research and Planning, Parkland College
CHARLES D. SALLEY (reactor), Research Associate, Office of Institutional Planning, Georgia State University

17D(1) *USING AGE, SEX, AND STUDENT LEVEL TO PROJECT CREDIT HOURS*

ANN K. DICKEY, Director of Institutional Research and Planning, Saginaw Valley State College
DAVID GOLDBERG, Associate Director, Population Studies Center, University of Michigan

Is the often-stated view that "it takes three or four older students to replace one traditional student" supported by fact? A preliminary study by one of the authors suggests that it probably is not. This paper reports early results of a more ambitious follow-up study which examined the average credit hour loads of various age groups of students in fifteen public, four-year institutions for fall terms 1974 through 1979. The historical data were then put to use to project credit hours and full-time equivalent enrollments for a state system. The independent variables include sex and degree level as well as age.

17D(2) *PROJECTING ENROLLMENTS FOR ACADEMIC UNITS WITHIN THE UNIVERSITY: AN EMPIRICAL APPROACH*

LORRAINE NEWLON, Acting Associate Director, Admissions and Records, California State University, Northridge
FRED DUKES, Acting Administrative Assistant, California State University, Northridge
JOHN R. SWANSON, Professor of Biology, California State University, Northridge

Enrollment projection methods in use today, while accurate at the aggregate level, often fail to produce projections for schools and departments. The model developed at California State University, Northridge consists of four different techniques for projecting aggregate *and* unit enrollments: (1) cohort survival model provides data on projected participation rates, (2) four univariate regression techniques are applied to schools and departments, (3) a verification technique is employed to select the projection method used for each level within a department, and (4) a graphic representation (plot) is automatically produced via computer. The model has demonstrated repeatedly its usefulness for university management and long-range planning.

17E UNIVERSITY CONSTITUENCIES IN RESEARCH AND PLANNING
(contributed papers)

JOHN MICHAEL LYONS (chair), Associate Vice President for Administration, University of Alabama in Birmingham
NORMAN P. UHL (reactor), Associate Vice Chancellor for Research, Evaluation, and Planning, North Carolina Central University

17E(1) *OPENNESS IN RESOURCE PLANNING IN STATE UNIVERSITIES*

TIMOTHY J. DELMONT, Assistant Chief Analyst, University of Minnesota

Executive officers in public universities often develop "open" and "closed" managerial styles in preparing budget requests to state authorities. This paper describes several attributes of an open managerial model—one emphasizing functions of communication, technical analysis, and participative decision making—which have been introduced in university budgeting practices. Study outcomes, based on survey data from system level and central officers in 32 research universities, have identified differences in respondent views about the extent and preference for openness procedures. Results indicating that respondents preferred limited analytical roles for central budget staffs suggested a key managerial question for executive and staff officers: Is a more sophisticated analytic staff function warranted in present budget planning practices?

ERIC No. HE 012 885

17E(2) *A THIRD-PARTY APPROACH TO INSTITUTIONAL RESEARCH AND PLANNING*

HUGH L. THOMPSON, President, Detroit Institute of Technology

Confronted by declining admissions standards, an erosion in its philanthropic base, a low retention rate, and a deteriorating physical environment, the Detroit Institute of Technology (DIT) commissioned the Massachusetts Institute of Technology to undertake an in-depth study of the role DIT should assume in preparing for the future. Demographic data were analyzed, interviews were conducted, and offerings of other institutions serving the area were reviewed. Within one year, DIT had a new mission statement, an approved academic blueprint, and a master plan for redevelopment of the physical area contiguous to the campus.

ERIC No. HE 012 886

17F PROCESSES AND TECHNIQUES FOR ALLOCATING/REALLOCATING RESOURCES (seminar)

ROBERT W. LAWLESS (chair), Associate Chancellor for Planning and Resource Allocation, University of Houston
DONALD M. NORRIS, Director, Institutional Studies, University of Houston
DOUGLAS J. WRIGHT, Director, Planning and Evaluation, University of Houston

This seminar addressed processes and techniques for institutions allocating/reallocating resources in a scarce-resource climate. It highlighted the process at the University of Houston which integrates several components: evaluation of program "quality" and "centrality"; establishing an institutional algorithm for determining resource priority based on quality/centrality; setting allowable ranges of program resources based on pedagogy, relative "graduateness," and quality; and use of information exchange among peer institutions. This seminar discussed the applicability of these and other techniques in different institutional settings, thereby establishing general, working hypotheses for resource allocation. Discussion explored other salient issues such as the role of statewide educational boards, implementation difficulties, and the limitations of analytical techniques.

17G INSTITUTIONAL RESEARCH PROBLEMS WITH QUALITATIVE DIMENSIONS (panel)

JOAN S. STARK (moderator), Dean, School of Education, University of Michigan
PATRICK T. TERENZINI, Director of Institutional Research, SUNY at Albany
WILLIAM TOOMBS, Professor of Higher Education, Center for the Study of Higher Education, Pennsylvania State University
LOIS E. TORRENCE, Director of Institutional Research, University of Connecticut

This was one of two related panels, sponsored by the AIR Publications Board to focus attention on the qualitative aspects of institutional research. Considerable interest has been expressed in both the qualitative issues which institutional researchers might profitably address and the qualitative methodologies which might be applied to a variety of institutional problems. Panel members set the stage by providing five-minute statements regarding qualitative dimensions of institutional research problems. Discussion was then opened to ascertain the variety of qualitative problems now being pursued by members and to gather background potentially useful in developing a series of papers on the qualitative dimensions of institutional research.

18F SPECIAL INTEREST AND REGIONAL GROUPS AND AFFILIATION WITH AIR (open hearing/discussion)

SUZANNE W. LARSEN (chair), Chairperson, Affiliated Groups Committee, AIR
W. SAM ADAMS, Secretary, AIR
WILLIAM F. LASHER, Treasurer, AIR

This session addressed the needs and desires of individuals and groups interested in special interest, regional, and/or affiliated status in AIR. Possible and proposed benefits and organizational requirements of affiliation were discussed.

19H FORUM LUNCHEON: MEETING THE CHALLENGES OF THE EIGHTIES (general session)

ROBERT H. FENSKE (chair), Forum Chair, AIR
ELIAS BLAKE, JR., President, Clark College

(Note: An edited transcript of this address begins on Page 31.)

20A COPING WITH RETRENCHMENT: AN INSTITUTIONAL RESEARCH PERSPECTIVE (panel)

DENISE STRENGLEIN (moderator), Data Base Coordinator, Office of Institutional Research, University of South Florida
THOMAS COLLINS, Director of Institutional Research, Mercer County Community College
CAROL FRANCES, Chief Economist, American Council on Education
JEFFREY HOLMES, Director, Education, Science, and Culture, Statistics Canada
B.C. (BURT) MATTHEWS, President, University of Waterloo (Ontario)

The demographers have given ample warning that the coming decade will bring a decline in the college-age population. In addition, runaway inflation and diminishing tax support of higher education will also take their toll. This suggests that many institutions will have to cope with retrenchment. Knowing both the measures of financial health and strategies for dealing with declining enrollments and budgets can help institutions to weather the storm. This panel brought together individuals whose foresight or hindsight could offer valuable insight into the process of retrenchment.

20B IS IT POSSIBLE TO MAINTAIN NEUTRALITY—AND DO WE WANT TO? (panel)

PAUL J. STASKEY (moderator), Director, Administrative Studies, Northern Arizona University
WILLIAM B. PHILLIPS, Associate Director for Academic Programs, Arizona Board of Regents
EDWIN R. SMITH, Assistant Vice President for Administration, West Virginia University
A.B. TEMPLETON, President, University of Texas at El Paso
RISDON J. WESTEN, Director of Institutional Research, U.S. Air Force Academy (Retired)

Given present economic conditions, universities—institutional research offices in particular—are being called upon to provide services to other governmental agencies. Refusal is virtually impossible because these requests usually come from the executive or legislative branch. However, institutions could find themselves embroiled in major political issues, with neutrality most difficult to maintain. The panel, representing a variety of perspectives, focused on approaches and tactics, covering many situations, to minimize the danger of placing institutions in this awkward position. The positive aspects of this new relationship were also discussed. The panel was in agreement that institutions will continue to receive requests for information from other governmental agencies. Several suggestions were offered: (1) all information must be presented in an honest and truthful manner, (2) the manner of presentation must be positive, (3) open lines of communication with other governmental agencies should be established, (4) institutional research and legal officers are necessary components of the decision-making team, (5) only one person must speak for the institution, (6) the implications of providing the information should be fully explained to the requesting agencies.

20C STRATEGIC PLANNING AND CONFLICT MANAGEMENT
(contributed papers)

WILLIAM P. FENSTEMACHER (chair), Director of Institutional Planning and Budgeting, University of Massachusetts-Boston

LOIS E. TORRENCE (reactor), Director of Institutional Research, University of Connecticut

20C(1) *STRATEGIC LONG-RANGE PLANNING FOR UNIVERSITIES*

MICHAEL E. BAKER, Director of Institutional Planning, Carnegie-Mellon University

The author has developed a strategic planning framework for universities. The definition of strategic planning, the planning framework, and examples of strategic planning are discussed. The examples include budget planning and planning for a planning department. The implications of this work for future inquiries in this field are outlined.

ERIC No. HE 012 887

20C(2) *PLANNING FOR INTERINSTITUTIONAL COOPERATION*

HEIDI L. MAHONEY, Assistant Vice President for Faculty and Staff Relations, SUNY College at Buffalo

The growth of interinstitutional cooperation in higher education has been impressively rapid during the past decade. Initially in response to burgeoning enrollment demands, and more recently in answer to fiscal stringencies, the cooperative movement has been regarded as the provider of greater access, increased quality, and possibly, reduced costs. These joint ventures occur in a context in which the potential for conflict among participants is always present. This study examines the means through which conflict can be used in positive ways to advance cooperation and suggests the development of standardized interinstitutional data bases as a technique for managing conflict. The development of such systems is recommended as an initial step in planning for interinstitutional cooperation.

ERIC No. HE 012 888

20D FINANCIAL AND LEARNING STRATEGY MODELS IN EUROPE
(contributed papers)

ANNELIESE MONIKA GRÜGER (chair), Academic Director, Head of Planning Department, Universität Düsseldorf

CHARLES H. BELANGER (reactor), Director of Institutional Research, Université de Montréal

20D(1) *AN AMERICAN MODELING SYSTEM IN EUROPE: ONE SUCCESS AND FUTURE PROSPECTS*

STEFAN D. BLOOMFIELD, Associate Director, Planning and Institutional Research, Oregon State University

DANIEL A. UPDEGROVE, Director, EFPM Project, EDUCOM

Recognizing the need to carefully tailor planning models to the needs of user institutions, model builders are increasingly turning to modeling systems that contain little or no content but which provide the user with great flexibility in specific implementations. To test the flexibility of one such generalized planning and management system, EFPM, an implementation was carried out at a French-language European university. This paper describes the special attributes of the system, and the implementation techniques, that led to the successful installation and use of EFPM in this environment. Also discussed are the prospects for future international usage of such systems by means of data line networks.

ERIC No. HE 012 889

20D(2) *THE SUITABILITY OF NONTRADITIONAL DISTANCE LEARNING SYSTEMS FOR DIFFERENT TYPES OF STUDENTS: THE EXPERIENCE OF THE OPEN UNIVERSITY OF THE UNITED KINGDOM*

NAOMI E. McINTOSH, Professor of Applied Social Research, The Open University (United Kingdom)

ALAN WOODLEY, Research Fellow, The Open University (United Kingdom)

As an example of a nontraditional learning system set up to meet the needs of mature students (21 and over) the Open University of the United Kingdom has been strikingly successful. It now has over 75,000 students and over 30,000 graduates. A request by government led to the acceptance of three experimental intakes of "younger" students (under 21 years) in 1974, 1975, and 1976. A longitudinal research program has been completed which compares the progress of these younger students with a sample of mature students, using sociological and psychometric research methods. The results provide much new information on the suitability of such open learning systems for different types of students.

ERIC No. HE 012 890

20E NONCOGNITIVE STUDENT VARIABLES/TRUTH IN TESTING (contributed papers)

CHARLES W. BRIM (chair), Associate Director, Illinois Board of Regents

ROBERT W. STARKEY (reactor), Analytical Studies Officer, University of California, San Diego

20E(1) *THE USE OF NONCOGNITIVE VARIABLES IN PREDICTING GRADE POINT AVERAGES OF STUDENTS IN A PREDOMINANTLY BLACK COLLEGE*

LINDA K. PRATT, Associate Director for Research and Evaluation, North Carolina Central University

NORMAN P. UHL, Associate Vice Chancellor for Research, Evaluation, and Planning, North Carolina Central University

SANDY DAVIS, Director of Institutional Studies, North Carolina Central University

Six motivational items from the North Carolina Central University freshman survey were investigated as possible predictors in the undergraduate admission equation. Equations were computed using data from 1976 and 1978, employing a double cross-validation design. A scale combining the six motivational questions was used in the equation along with the rank in the high school class and the SAT math and verbal scores. The multiple R for the 1976 class increased significantly with the addition of the MOTIV scale, as did the multiple R for the 1978 class. When the weights of the regression equations, which included the motivational questions, were applied to the opposing sets of data to obtain predicted grade point averages, the correlation was .39 when the 1978 equation was applied to the 1976 class data and .43 when the 1976 equation was applied to the 1978 class data. The results indicate that the motivational scale has promise as a non-cognitive predictor. The findings are discussed in light of the Bakke decision and of the relative SAT scores of whites and minorities.

ERIC No. HE 012 891

20E(2) *IMPLICATIONS OF TRUTH-IN-TESTING LEGISLATION ON STUDENT SELECTION AND CERTIFICATION*

MARGARET B. WEBER, Professional Associate, Educational Testing Service

Truth-in-testing legislation is stirring considerable debate concerning the ways in which tests are developed, how they are and will be used, and how changes in test development and use will affect students, colleges, and universities. This paper discusses truth-in-testing legislation at the state and federal level, with discussion focusing on the scope of the legislation and disclosure requirements, and on the impact of these legislative requirements on students, colleges, and universities.

ERIC No. HE 012 892

20F PERSPECTIVES ON CENTRALIZED PLANNING IN HIGHER EDUCATION (seminar)

MARILYN McCOY (chair), Senior Staff Associate, National Center for Higher Education Management Systems (NCHEMS)
CLAUDE COSSU, Maitre Assistant, UER—Economie et Gestion, Université de Paris I
EDWARD DESROSIERS, Director of Research, Council of Ontario Universities
GEORGE WEATHERSBY, Commissioner, State of Indiana Commission for Higher Education

A drift toward more extensive centralization of planning for higher education has been evident in the United States in the last decade. While relatively new in the United States, central planning has a long history in other countries. Central coordination offers the advantages of program specialization and a reduction of expensive redundancy. It also has the disadvantage of greater distance from the action and a tendency toward inflexibility which discourages innovation. Central planning is shaped by the academic traditions and organizational structures where it occurs. Some forms are more effective than others in achieving the dual objectives of innovative responsiveness and efficient coordination. This seminar explored the experiences of various countries with centralized planning. Brief descriptions of the content of centralized planning in each country were followed by an analysis of the distribution of decision-making responsibility at different organizational levels and an evaluation of its effectiveness.

20G PUBLISH OR PERISH—IS IT APPLICABLE TO INSTITUTIONAL RESEARCHERS?: A DEBATE (panel)

GERALD W. McLAUGHLIN (moderator), Associate Director of Institutional Research, Virginia Polytechnic Institute and State University

PRO

MARVIN W. PETERSON, Director and Professor, Center for the Study of Higher Education, University of Michigan
JOSEPH G. ROSSMEIER, Director of Planning Research and Management Services, Northern Virginia Community College

CON

WILLIAM F. LASHER, Director, Office of Institutional Studies, University of Texas at Austin
JOE L. SAUPE, University Director of Institutional Research, University of Missouri

Within the role of institutional researcher lies a dimension of professional orientation which ranges from administrator to academician. The administrator seems to receive little reward (and even occasional sanction) for investing time and effort in classical research and publication. The academician, in contrast, is heavily dependent on publication activity for promotion, salary increase, and professional visibility. Where does (and should) the institutional researcher fit in this dimension? The panel evaluated involvement in the research-documentation-publication-utilization cycle as it influences the professional development of institutional researchers—the quality of their work and its value to their institutions.

21A ACADEMIC PROGRAM REVIEW AND STRATEGIC PLANNING (panel)

ROBERT J. BARAK (moderator), Director of Academic Affairs and Research, Iowa Board of Regents

JOSEPH E. GILMOUR, Coordinator of Academic Affairs, Council of State College and University Presidents (Washington)

GARY B. LOTT, Coordinator of Academic Programs, State University System of Florida

Colleges have shown greatly increased interest in program review over the past decade. The impetus for the review effort has varied from improvement of academic programs to concerns for program duplication. In some instances, a framework for program review activity has been missing. In contrast, institutions are only beginning to be interested in strategic planning, that is, identifying and evaluating actions that have long-term impact through the concurrent consideration of institutional purposes, capabilities, and environmental factors. Program review is an important tool for strategic planning which, in turn, provides the necessary framework for program review.

21B RESEARCH AND THE FUTURE OF PREDOMINANTLY BLACK COLLEGES (panel)

EDWARD P. ST. JOHN (moderator), Associate Director of Research and Planning, Missouri Department of Higher Education

ROBERT I. LEWIS, II, Director of Institutional Studies, Norfolk State College

PRINCE RIVERS, Provost, Atlanta University Center

JEWEL H. STEWART, Associate Director of Research and Planning, Missouri Department of Higher Education

Higher education institutions that serve black Americans—particularly the predominantly black institutions—are facing unique developmental and policy issues as a result of their history and of the recent HEW desegregation regulations. This panel considered how research on black colleges can inform policymakers and administrators about some of the special planning needs of these institutions. In particular, panelists considered research that indentifies the characteristics of traditionally and predominantly black colleges, the appropriateness of different planning and management strategies for developing colleges and universities, and the major issues facing state and federal policymakers concerned about the future of these vital institutions.

21C COST OF FEDERAL SOCIAL LEGISLATION (contributed papers)

PAUL J. STASKEY (chair), Director, Administrative Studies, Northern Arizona University

DENNIS P. JONES (reactor), Associate Director, National Center for Higher Education Management Systems (NCHEMS)

21C(1) *A STUDY OF THE COSTS OF COMPLIANCE WITH FEDERAL SOCIAL LEGISLATION*

LAWRENCE W. BROOMALL, Assistant Vice President for Finance, Virginia Polytechnic Institute and State University

D. ANNE CAVALIER, Instructor of Personnel Administration, Virginia Polytechnic Institute and State University

This study provides insights into the compliance costs associated with federal Affirmative Action/Equal Employment Opportunity guidelines as applied to the management of faculty at a major research university during one fiscal year. The analysis confirmed that such costs were very real and were of sufficient magnitude to warrant concern in this era of fiscal distress. Based upon the results of the study, suggestions are made as to the utility of such data and the need for additional parallel efforts at other institutions across the nation. Emphasis is placed upon discussing the need to influence the federal process and the utility of compliance cost data within an institution.

ERIC No. HE 012 893

21C(2) *A STATISTICAL EVALUATION OF THE RESOURCES REQUIRED TO PROVIDE PROGRAM ACCESSIBILITY TO THE HANDICAPPED*

ROLF M. WULFSBERG, Assistant Administrator for Research and Analysis, National Center for Education Statistics (NCES)

RICHARD J. PETERSEN, Survey Director, National Center for Education Statistics (NCES)

Congressional directives which affect education often require statistical evaluation before they can be responsibly implemented. This paper discusses a national study of higher education physical plant facilities done by the National Center for Education Statistics. The study developed reliable estimates of the compliance costs of the program accessibility provisions of Section 504 as they relate to the mobility impaired. The authors review the findings of the 1978 study and discuss the complex two-stage research design used to validate the results and remove institutional and non-respondent bias.

21D FINANCIAL AND POLITICAL IMPACT ON ADMINISTRATION (contributed papers)

RONALD T. FITZGERALD, (chair), Visiting Professor, Arizona State University

LARRY G. JONES (reactor), Associate Director, Institutional Research and Planning, University of Georgia

21D(1) *FORMULA FUNDING OF UNIVERSITY ADMINISTRATION AND SUPPORT*

ROBERT COX, Coordinator for Institutional Research, Florida State University

The distribution of funds for the area of university administration, as determined by funding formulas, is examined. Using work-load data from the nine universities of the State University System of Florida, formulas were run from twelve of the fourteen states which formula fund university administration. Three issues were examined: (1) the net economy of scale adjustment for each institution which the formula generates, (2) variations in the formulas' distribution of funds which derive from variations in the parameters used to estimate work load, and (3) variations in the distribution associated with the magnitude of systemwide funds assigned to this area. Results of the investigation indicate that the majority of fluctuation in the distribution of funds can be attributed to the economy of scale adjustment.

ERIC No. HE 012 894

21D(2) *IS ANYONE OUT THERE LISTENING?*

K. STANLEY GALE, Assistant Vice President for Administrative Operations, Eastern New Mexico University

Of all the goals that institutional researchers might set for themselves for the 1980s, there are at least two items of unfinished business that deserve continued attention: credibility and relevance. An attitudinal study involving 63 midwestern academic deans indicated that relevance was still a problem and that familiarity with institutional research activities was an inverse indicator of future support for increased uses of quantification. This paper presents some of the findings of a study of Class 11A institutions in eight midwestern states, summarizes some earlier studies, and suggests some guidelines to help administrators make the most of the ambient qualification levels at their institutions.

ERIC No. HE 012 895

21E INFORMATION SYSTEMS—EVALUATION, PLANNING, AND USE (contributed paper)

JOHN Wm. RIDGE (chair), Director of Institutional Studies, University of Wisconsin-Eau Claire

CHARLES H. BRYSON (reactor), Research Associate, Office of Institutional Planning, Georgia State University

21E(1) *A MODEL FOR INFORMATION SYSTEMS PLANNING AND EVALUATION*

D.R. COLEMAN, Director of Institutional Research and Planning, University of Central Florida
J.R. BOLTE, Associate Vice President for Academic Affairs, University of Central Florida

A model for the planning and evaluation of Management Information Systems (MIS) at the institutional or system level in higher education is presented. The procedure provides an analytical approach for assessing the effectiveness of an existing information system utilizing a variation of the Business Systems Planning methodology developed by the IBM Corporation. The model emphasizes involvement of top-level administrators in the MIS planning and evaluation process and uses follow-up procedures to monitor system changes and improve MIS planning. An example of the use of the model in the State University System of Florida is presented. (The authors wish to acknowledge the efforts and assistance of Dr. Sharon Topping, Coordinator, Management System Design, State University System of Florida, who directed the State University System MIS study and evaluation.)

ERIC No. HE 012 896

21E(2) *(withdrawn)*

21F THE ROLE OF MARKETING IN HIGHER EDUCATION (seminar)

GERALD H. GAITHER (chair), Director of Institutional Research, California State University, Northridge
WILLIAM IHLANFELDT, Vice President for Institutional Relations and Dean of Admissions, Northwestern University
PETER JACKSON, Associate Provost, University of Houston
E. JAMES MAXEY, Assistant Vice President and Director of Institutional Services, American College Testing Program (ACT)

As the threat to institutional survival intensifies in the 1980s, it will be necessary for administrators to think through the conflicting pressures that will emerge from the desire to respond to student needs on the one hand and the necessity of maintaining integrity of values and educational mission on the other. Institutional research people who recommend marketing techniques will have to be clear on these issues themselves.

21G THE ROLE OF QUALITATIVE RESEARCH METHODOLOGIES IN INSTITUTIONAL RESEARCH (panel)

JOAN S. STARK (moderator), Dean, School of Education, University of Michigan
EILEEN KUHNS, Associate Professor and Coordinator, Educational Administration Program, Catholic University of America
JOHN C. SMART, Professor of Higher Education, University of Kentucky
ROBERT A. WALLHAUS, Deputy Director for Academic and Health Affairs, Illinois Board of Higher Education

This was one of two related panels, sponsored by the AIR Publications Board to focus attention on the qualitative aspects of institutional research. Considerable interest has been expressed in both the qualitative issues which institutional researchers might profitably address and the qualitative methodologies which might be applied to a variety of institutional problems. Panel members set the stage by providing five-minute statements regarding the role of qualitative methodologies in solving institutional problems. Discussion was then opened to ascertain the variety of qualitative methods now being used by members and to gather background potentially useful in developing a series of papers on the qualitative methodologies useful to institutional researchers.

22A/B
23A/B HIGHER EDUCATION AND THE ENVIRONMENT OF THE EIGHTIES
(panel discussion and reaction)

(1) *PANEL OF STATE OFFICIALS*

DAVID M. MORGAN (moderator), Staff Director, Governor's Committee on Postsecondary Education (Georgia)
ROBERT H. BELL, Secretary, Higher Education Committee, Georgia State Senate
ARTHUR M. GIGNILLIAT, Chairman, University System of Georgia Committee, Georgia House of Representatives
NELLIE HOENES, Director, Education Development Division, Office of Planning and Budget, State of Georgia
LAMAR R. PLUNKETT, Vice Chairman, Board of Regents, State University System of Georgia

(2) *PANEL OF REACTORS*

ROBERT A. WALLHAUS (moderator), Deputy Director for Academic and Health Affairs, Illinois Board of Higher Education
ELWIN F. CAMMACK, Associate Vice President, University of Wisconsin System
JOE L. SAUPE, University Director of Institutional Research, University of Missouri
JOSEPH T. SUTTON, Vice President for Planning and Operations, University of Alabama

(Note: An edited transcript of this session begins on page 37.)

23C FORECASTING ENROLLMENTS (contributed papers)

DONALD J. ANDERSON (chair), Director of Institutional Research, University of South Florida
CHARLES D. SALLEY (reactor), Research Associate, Office of Institutional Planning, Georgia State University

23C(1) *A COMPREHENSIVE TECHNIQUE FOR FORECASTING UNIVERSITY ENROLLMENT, INSTRUCTIONAL WORK LOADS, AND FUNDING LEVELS*

WILLIAM F. LASHER, Director, Office of Institutional Studies, University of Texas at Austin
DAVID C. BODENMAN, Assistant Director, Office of Institutional Studies, University of Texas at Austin
MARSHA K. IVERY, Systems Analyst, Office of Institutional Studies, University of Texas at Austin

It is clear that the unsettled higher education environment of the eighties will call for increased reliance on planning and management techniques in colleges and universities across the country. Changes in demographics, environment, student interest, student mix, notions of faculty tenure, and other factors make it more difficult for all institutions to do the analyses required to develop the planning parameters required to use these techniques effectively. At major research universities where the institutional objectives are multifaceted, where enrollments tend to be larger, and where the outlook is state- and nationwide rather than regional, planning and management are even more complex. The purpose of this paper is to describe how one major research university has developed a series of analytical techniques to deal with some of the problems of forecasting future enrollments, instructional work loads, and funding levels.

ERIC No. HE 012 897

23C(2) *THE INCREASING IMPACT OF ECONOMIC CONDITIONS UPON HIGHER EDUCATION ENROLLMENTS*

JAMES J. RUSK, Planning Analyst, University of Arizona
LARRY L. LESLIE, Professor of Higher Education, University of Arizona

The effects of economic conditions upon higher education enrollments are specified nationally, regionally, and for selected individual institutions. It appears clear that since 1973, about the time when studies began to report on the declining value of a college education, potential students became much more sensitive to the opportunity costs of college attendance. As job opportunities increased, forgone earnings grew correspondingly, and enrollments turned down. Economic reversals were accompanied by enrollment upturns. Implications of this study to enrollment projections and planning are clear.

ERIC No. HE 012 897

23E FORMULA BUDGETING (contributed papers)

BARBARA J. HILLMAN (chair), Analyst, University of Calgary

23E(1) *NEW APPROACHES TO FORMULA BUDGETING—A COMPARATIVE STUDY*

RICHARD ALLEN, Senior Associate, National Center for Higher Education Management Systems (NCHEMS)

JAMES R. TOPPING, Senior Associate, National Center for Higher Education Management Systems (NCHEMS)

The decline in enrollments expected in the 1980s will create severe fiscal stress on institutions if support is reduced at the same rate. This would happen with most of the budget formulas now in use. Some states are developing new types of budget formulas which are applicable to an environment of declining enrollments. The authors examined the formulas of three states where new designs have been developed to deal with these problems; they are described and critiqued. Conclusions from the investigation are that fixed and variable cost formulas may prove useful and that formulas will probably have to become more complex.

23E(2) *ANALYZING RESOURCE NEEDS: FORMULA FUNDING OF HIGHER EDUCATION*

DEBORAH J. TEETER, Director, Institutional Research and Planning, University of Kansas

RICHARD L. MANN, University Director, Institutional Research, Information Systems, and Personnel Services, University of Kansas

To assist funders who are concerned with adequately providing and equitably distributing resources among institutions of higher education, the Board of Regents institutions in Kansas developed new funding procedures using cost comparisons as a benchmark for analyzing funding requests. The paper discusses the process of selecting peer institutions which are used as the basis for developing cost comparisons. It also examines the details of the comparative cost analyses and how they facilitate higher education funding decisions.

23F COMPUTER GRAPHICS (seminar)

DENISE STRENGLEIN (chair), Data Base Coordinator, Office of Institutional Research, University of South Florida

TOM McMULLEN, Manager, Telecommunications Services, Georgia State University

ANDERS VINBERG, Vice President for Development, ISSCO Corporation

A growing concern in all organizations is how best to present complex data and information in order to achieve maximum impact. Computer graphics are likely to play a role of increasing importance as technology improves. The current state of the art was reviewed in this seminar, some software demonstrated and evaluated, the costs and logistics of using various systems described, and future directions and uses identified. Also addressed were ways and means to effectively present complex data and information in order to increase understanding and maximize results.

23G COLLECTIVE BARGAINING IN HIGHER EDUCATION—THE ADMINISTRATIVE IMPLICATIONS (seminar)

ILONA TURRISI (chair), Director, Office of Budget and Analysis, Florida State University

NEIL B. BETTEN, Professor of History, Florida State University

CAESAR J. NAPLES, Associate Vice Chancellor, State University System of Florida

A brief overview of collective bargaining in higher education was presented. The focus of the seminar was on processes involved in contract negotiations and administration. The contract negotiation phase included a discussion of information needs, negotiation strategy, and procedures. The contract administration phase included an emphasis on grievance handling and resolution. The major types of problems which lead to grievances and grievance-resolution steps were identified and discussed. Finally, the seminar considered the impact of collective bargaining on institutional governance.

Minutes of the Annual Business Meeting

The Peachtree Plaza Hotel, Atlanta, Georgia
April 29, 1980

The following items are appended to the original of these minutes:

A. Packet of agenda materials distributed to each Forum registrant, including the following items:
   1. Agenda
   2. Minutes of the 1979 Annual Business Meeting
   3. Reports of the Officers and Committees:
      a. President
      b. Executive Secretary/Office
      c. Past President/Nominating Committee/Election Committee
      d. Treasurer/Finance Committee
      e. Secretary/Membership Committee
      f. Site Selection Committee
      g. Publications Board
      h. Affiliated Groups Committee
      i. Committee of Correspondents
      j. Policy Analysis Committee
      k. Self-Study Committee
   4. Proposed budget for 1980–81

B. Annual Report of the Workshop Committee

C. Membership Report (count)

The meeting was called to order by the president, F. Craig Johnson, at 3:30 p.m. A quorum was present.

I. **Minutes of the 1979 Annual Business Meeting.**
Action: The minutes were approved without correction.

II. **Recognition.**
The president recognized those members who leave the Executive Committee at the end of June 1980: Robert A. Wallhaus, William F. Lasher, Robert H. Fenske, Molly Corbett Broad, and Gerald W. McLaughlin. He expressed the appreciation of the membership of AIR for their years of service to the Association.

III. **Reports of Officers and Committees.** (See Appendix A)
The president asked for questions or concerns about the committee reports or any of the committee areas as each report was announced.

A. President (F. Craig Johnson): None

B. Executive Secretary/Office (Jean C. Chulak): None

C. Vice President/Planning Committee (George Beatty, Jr.): None

D. Past President/Nominating Committee/Election Committee (Robert A. Wallhaus): No questions.
Wallhaus announced the results of the election for officers to take office on July 1, 1980. He also introduced the following persons to the membership:

Vice President	William L. Tetlow
Treasurer	Hans H. Jenny
Associate Forum Chair	Daniel R. Coleman
Member-at-Large	Paul Jedamus
Member-at-Large	Donald J. Reichard

Nominating Committee Members: Frank S. Black, Jr. (not present)
Franklin L. Duff
Marilyn McCoy
Laura E. Saunders
Patrick L. Terenzini

E. Treasurer/Finance Committee (William F. Lasher): None
F. Secretary/Membership Committee (W. Sam Adams): None (See Appendix C)
G. Site Selection Committee (W. Sam Adams): None
H. 1980 Forum Committee (Robert H. Fenske): An attendance figure of 854 was announced by the president
I. 1981 Forum Committee (John S. Chase): None
Chase introduced Janis H. Weiss, local arrangements committee chairperson who issued an invitation to all to attend the 1981 Forum in the Twin Cities, Minneapolis/St. Paul, May 17–21
J. Workshops Committee (John S. Chase): None
K. Publications Board (Gerald W. McLaughlin): None
L. Affiliated Groups Committee (Suzanne W. Larsen): None
M. Committee of Correspondents (Charles H. Belanger): None
N. Policy Analysis Committee (Molly Corbett Broad): None
O. Archives Committee (Ilona Turrisi, not present): None
P. Self-Study Committee (Bernard S. Sheehan for Donald C. Lelong): None
The president reported to the membership that the Executive Committee had carefully reviewed the Self-Study Report and had taken action on some items, had rejected some others, and had deferred action on the rest. A summary of that action follows: (See pages 16–17 of Appendix A)
Publications:
1. Approved.
2. Deferred.
3. Approved.

Membership Maintenance/Building:
1. Approved.

Analytical Support:
1. Agreed to in spirit. Action deferred.
2. Agreed to in spirit. Action deferred.

Support for Professional Development Activities:
1. Rejected.

Contract Negotiations:
1. Deferred.

Personnel:
1. Agreed to in principle. Action deferred.
2. Approved.
3. Approved.
4. Rejected.

Orientation of New Executive Committee Members:
1. Approved.

IV. **Proposed Budget for 1980–81.** (William F. Lasher)
Lasher explained the procedures used by the Executive Committee in preparing the proposed budget for FY 1980–81.
Action: Motion (Lasher) and second (Denise Strenglein) to approve the proposed budget for FY 1980–81 as presented by the Executive Committee. In the discussion which followed, questions were raised and answered regarding (a) implications for the future of the record budget size (Warren W. Gulko), (b) reconciliation of budget figures with the explanation which accompanied the document (Adrian Harris), and (c) the wisdom of using reserves to fund ongoing projects/programs (James W. Firnberg). The motion carried.

V. **Unfinished Business.**
Unresolved planning issues from 1979 Annual Business Meeting. (George W. Beatty)
Beatty reported that issues carried forward from the previous annual meeting have been addressed in the course of this year's discussion in the Executive Committee and are still under consideration.

VI. **New Business.**

A. Relationship of AIR and the Society of College and University Planners (SCUP).
Action: Motion (Werner Lendenmann) and second (Stuart Friedman) that a joint study be conducted re bringing AIR and SCUP together. The following persons spoke to the motion, all in favor: Thomas R. Mason, Warren W. Gulko, Jeffrey Holmes, Jeremy Wilson, and Stefan D. Bloomfield. The motion carried.

B. Format of the Treasurer's Report.
Action: Motion (Warren W. Gulko) and second (Adrian Harris) that the Treasurer's Report present a one-year estimate beyond the budget year in order to array the fiscal implications of any changes and that the Treasurer's Report include a more comprehensive analysis of both current and projected revenues and expenditures and the policy implications of any changes in the budget details.

The meeting adjourned at 4:55 p.m.

ANNUAL REPORT OF THE PRESIDENT

F. Craig Johnson

At the 1979 annual business meeting held in San Diego, California, several topics were referred by the membership to the Executive Committee. Work on these topics has been carried out by the several committees listed below. A full description about their progress is contained in the respective committee reports.

1. Planning Committee, George Beatty, Chair:
   a. Report on long-range planning activities
   b. Establishment of a task force on professional development
2. Publications Committee, Gerald McLaughlin, Chair:
   Sponsor a series of white papers on the qualitative dimension of higher education
3. Committee of Correspondents, Charles Belanger, Chair:
   Explore a trailer Forum
4. Affiliated Groups Committee, Suzanne Larsen, Chair:
   Prepare specific elements of a more agressive program to aid regional associations.

In addition, the Executive Committee assigned activities to several committees based either on constitutional requirements or on actions taken by the Executive Committee itself. Progress on these activities can be found in the respective committee reports.

1. Planning Committee, George Beatty, Chair:
   a. Increase internship exchange activities
   b. Study the feasibility of an AIR Foundation
   c. Develop a procedure for an elected Publications Board chair
2. Workshop Committee, John Chase, Chair:
   Develop a plan to insure quality control of workshops
3. Publications Board, Gerald McLaughlin, Chair:
   Consider a silver anniversary publication
4. Finance Committee, William Lasher, Chair
   a. Develop a conflict of interest policy
   b. Develop a personal liability policy
5. Executive Secretary, Jean Chulak
   Establish relationship in Tallahassee with legal counsel

Two special-purpose committees were established: the Self-Study Committee, Donald C. Lelong, Chair, and the Archives Committee, Ilona Turrisi, Chair.

The Executive Committee would like to thank the many members of the Association who have made suggestions to them. Several of these suggestions have resulted in action which has improved and strengthened the Association. Some examples include:

1. An informal communication network among AIR, departments of higher education, and former students now working in institutional research (suggested by Marvin Peterson)
2. European Institutional Research Forum, held in Paris in November 1979 (suggested and chaired by Claude Cossu)
3. An active Archives Development Program, in progress in Tallahassee (suggested by Joe Saupe)
4. The visibility of the profession of institutional research, increased when a group of institutional researchers presented a program at The Southern Association of Colleges and Universities, Presidential Forum in Atlanta in December 1979 (suggested by Jim Montgomery)

5. Call for proposal for Forum seminars, panels, and workshops, now a part of the contributed papers solicitation (suggested by DeVondra Nayyar)
6. A study of career paths of institutional researchers, given approval and nonmonetary support (suggested and carried out by Alton Taylor). (Note: The results of this study are being presented at the Forum on Tuesday morning, Session 138.)

ANNUAL REPORT OF THE EXECUTIVE SECRETARY

Jean C. Chulak

Although the basic nature of the charge and activity of the Executive Office has not changed in any major way since my report at the Forum in San Diego, the volume of the work handled there continues to increase as a result of increasing numbers of members and the increased expertise ("corporate memory", if you will) of the staff.

Charge

The Executive Office is expected to provide administrative support to the officers, committees, and activities of the Association. In some cases, this is done with considerable direct, working contact with officers or chairpersons; in others, it is done relatively independently with delegated responsibility.

Activities/Status

1. Office Space and Staff. We continue to operate in a suite of rooms (750 sq. ft.) in the graduate education building on the Florida State University Campus. The Staff has consisted of a full-time executive secretary, a nearly full-time secretary (Jayne Gordon, who has recently resigned to return to her hometown), a half-time graduate assistant (Julia Duckwall), and valuable temporary help provided by Mary Martin who has worked during the period of heavy Forum activity.

   Our relationship with Florida State continues to be mutually satisfying.
2. Professional Meetings. I attended the Midwinter Management Conference of the American Society of Association Executives (ASAE) in Chicago in early April where I was enrolled for three one-day classes --two in "convention management" and one in "editing and publishing". I find ASAE meetings most helpful to me in the work I do with AIR.
3. General administration. The procedures developed in previous year have served us well and have not been changed in any major way. Included in this broad category was the processing of more than 2,000 incoming checks and receipts, preparation of some 600 income and expense vouchers and checks, financial reporting, compilation, preparation, and distribution of materials for the Executive Committee and the Annual Business Meeting and preparing the minutes of these meetings, maintenance of the Policy Manual, maintenance of the official records of the Association, and response to general requests for information or assistance.

   At the direction of the Executive Committee, we secured the services of an attorney to advise us in contractual matters.
4. Archives. We have forwarded to the AIR archives collection at Strozier Library, Florida State University, more than twenty-five boxes of records. We will forward annually materials which are no longer of immediate use to the office.
5. Nominations/Election. Working with Chairperson Wallhaus, our office prepared the call for nominations and acknowledged, processed, and forwarded to the committee the responses. Following their selection, we prepared and mailed the brochure and ballot and provided support to the Election Committee which did the tally.
6. Membership. The increase in membership has continued its steady climb by about 10% a year. The final figure for calendar-year 1979 was 1710 (up 10% from 1978). The current pace of membership for 1980 indicates to me that we can expect a final figure of more than 1800.

   Our office is responsible for sending the renewal mailing and follow-ups and for maintaining the membership files--both manual and computer. The membership directory is prepared and printed by the Executive Office staff from this information.
7. Placement. The Placement Service continues to serve, at any given time, 50-60 individual AIR members seeking new positions and 5-10 institutions with position openings. Contact between them is facilitated by a monthly bulletin; we do not attempt to do any selecting, matching, or searching.
8. Forum. Working very closely with Forum Chair Fenske and his subcommittees, we were heavily involved in preparation for the 1980 Forum.

   The call for contributed papers was mailed in the summer. Proposals were coordinated in our office and mailed to appropriate committees for review. Formal letters of acceptance/rejection were mailed from our office, over Fenske's signature, as were follow-up letters regarding presentation and publications.

We prepared and distributed the program books and registration materials for the Forum which were sent to approximately 3000 persons. In addition, the one-page flyer was sent to several thousand others. Registration forms are returned to our office for processing. It appears that attendance at the 1980 Forum will surpass that of previous years, although it is too early to predict by how much. Many people join AIR for the first time in connection with the Forum, and we also feel a surge at this time of new members who cannot attend.

Our on-site responsibility centers on the registration functions, although we become more involved each year with other areas in which we have gained expertise. Once again, I want to acknowledge the outstanding work done by our Local Arrangement Committee. They are among the unsung heros of the Forum, coordinating every detail to make a smooth product.

9. Publications. The Executive Office has continued to work closely with the editors in the publication of the following: AIR Newsletter (4 issues), the Professional File (4 issues), and the Proceedings (1). In addition, we have prepared and distributed to members subscription materials for Research in Higher Education, New Directions for Institutional Research, and our own publications.

   Working with our attorney, we facilitated preparation of a new contract with the New Directions publisher, Jossey-Bass Inc.

   We continue to process orders for AIR publications, more than 100 of which have been filled so far this year.

10. Other Committee Support.
    a. Committee of Correspondents. At Belanger's request and working with Craig Johnson, we prepared a membership "brochure" designed to answer some specific question received from non-North Americans. We also contacted, for membership, those persons who attended the European AIR meeting in November.
    b. Site Selection. Working with the committee and our attorney, we helped to prepare a "model hotel contract for use in 1982 and after.

The Office, and this Executive Secretary, will soon begin their seventh year. Once again, I want to acknowledge the help, support, good humor, and other contributions of the officers and members of AIR who make my job quite special.

ANNUAL REPORT OF THE NOMINATING COMMITTEE/ELECTION COMMITTEE

Robert A. Wallhaus, Nominating Committee Chair

Nominating Committee Members: Mary K. Kinnick, E. Timothy Lighfield, Donald M. Norris, Denise Strenglein, and D. L. (Woody) Trautman

Election Committee Members: C. Frank Elizey (chair), Jack Anderson, and William D. Law, Jr.

Nominating Committee

One hundred fifteen (115) nominations were presented to the Committee for consideration for offices in the Association. The Committee nominated the following double slate:

- for Vice President: Oscar T. Lenning and William L. Tetlow
- for Treasurer: Hans H. Jenny and Ilona Turrisi
- for Associate Forum Chair: Daniel R. Coleman and Eugene C. Craven
- for Member-at-Large (2): William P. Fenstemacher, Paul Jedamus, Horace F. Griffitts, and Donald J Reichard
- for Nominating Committee Member (5): Frank S. Black, Jr., Alfred L. Cooke, Douglas A. Mathewson, R. Sue Mims, Laura E. Saunders, Stuart M. Bounds, Franklin L. Duff, Marilyn McCoy, John A. Muffo, Patrick T. Terenzini

Election

The results of the election of officers for 1980-81 are:

Vice President:	William L. Tetlow
Treasurer:	Hans H. Jenny
Associate Forum Chair:	Daniel R. Coleman
Members-at-Large (2):	Paul Jedamus Donald J. Reichard
Nominating Committee Members (5):	Marilyn McCoy Laura E. Saunders Patrick T. Terenzini Frank S. Black, Jr. Franklin L. Duff

ANNUAL REPORT OF THE TREASURER

William F. Lasher

The end of the Association's last fiscal year (1978-79) found AIR to be in its strongest financial position to date. We are now a $100,000-plus organization. During this period of economic uncertainty, we should all take pride in the fact that our Association is fiscally sound. At the Forum in San Diego, I reported that I thought there were two main reasons for our financial stability: professionally rewarding programs and responsible leadership. Based on events of the past year, I see no reason to change my assessment. Although financial transactions for the current fiscal year are, of course, not yet complete, there is every reason to believe that we will again reach June 30 in strong financial condition.

Fortunately, we have resources in reserve that give us the opportunity to consider expanding our activities or moving into new areas. Several proposals which would provide additional services to AIR members are included in the budgtet for 1980-81 which is being proposed by the Executive Committee.

Again this year, I encourage any of you who have questions or recommendations concerning our financial condition to contact Jean Chulak, our Executive Secretary, or me. We are more than willing to discuss financial issues with you at any time.

Financial Statement

July 1, 1978-June 30, 1979

Table 1: Total Receipts[a]

Budget Category	Approved Budget	Adjusted Budget	Actual Income
Membership Dues	$ 37,500.00	$ 42,300.00	$ 41,938.85
Forum	42,900.00	47,000.00	49,525.90
Publications	3,000.00	3,000.00	3,140.47
Regional Workshops	10,000.00	6,000.00	5,593.00
Interest	4,000.00	4,000.00	4,379.10
Miscellaneous	500.00	500.00	473.36
Reserves	8,900.00	0	0
Total budgeted receipts	$106,800.00	$102,800.00	$105,050.68
Unbudgeted receipts[b]			13,729.45
Total receipts			$118,780.13

Table 2: Total Disbursements[a]

Budget Category	Approved Budget	Adjusted Budget	Actual Expenses
Salaries/Wages/Fringes	$ 27,150.00	$ 27,150.00	$ 26,547.76
General Administration	15,650.00	17,450.00	17,412.78
Forum	14,700.00	16,900.00	16,871.42
Membership	5,800.00	5,800.00	5,713.90
Nominations/Elections	2,700.00	2,700.00	2,640.62
Publications	22,800.00	22,000.00	15,433.63
Regional Workshops	10,000.00	6,000.00	5,478.50
Other Committees	2,000.00	4,150.00	1,204.08
Program Development	3,000.00	650.00	0
Contingency	2,000.00	0	0
Capital Outlay	1,000.00	0	0
Total budgeted disbursements	$106,800.00	$102,800.00	$ 91,302.69
Unbudgeted disbursements			12,604.00
Total disbursements			$103,906.69

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[a] This report does not reflect in-kind income from Florida State University nor its allocation. Such detail can be found in the financial statements prepared by Catledge, Sanders and Sanders, Certified Public Accountants. These statements are available for examination upon request from the AIR Treasurer or the Executive Secretary.

[b] At our auditor's suggestion, an "unbudgeted" category has been included for itmes not intended to be income producing (e.g., ticket sales for Forum special events or labels produced for other organizations) and for the disbursements connected with such items.

Table 3: Cash Position

Cash Assets	July 1, 1978	June 30, 1979
Petty Cash	$ 20.00	$ 29.01
Checking Account	2,630.21	(63.19)
Passbook Savings	30,955.97	46,827.56
Certificates of Deposit	42,432.33	45,590.18
Prepaid Postage and Prepaid Expense	914.05	166.59
FSU Agency Account	(32.91)	177.95
Net Value, Furnishings and Equipment	3,553.70	2,819.38
Accounts Receivable	2,371.31	2,657.83
Total cash assets	$ 82,844.66	$ 98,205.31
Cash Liabilities		
State and Federal Taxes	$ 45.95	53.81
Prepaid Income	1,650.00	3,510.00
Accounts Payable	2,026.51	572.13
Miscellaneous	49.00	134.74
Total cash liabilities	$ 3,771.46	$ 4,270.68
Net Cash Assets (unaudited)	$ 79,073.20	$ 93,934.63
Net Adjustments from Auditor's Report	(12.01)	81.74
Net Cash Assets	$ 79,061.19	$ 94,016.37
Net Change		$ 14,955.18

ANNUAL REPORT OF THE MEMBERSHIP COMMITTEE

W. Sam Adams, Chair

Committee members: John S. Chase, Horace F. Griffitts, Mark D. Johnson, Eleanor Langlois, Oscar T. Lenning, Robert I. Lewis, Thaly Nilsson and Donald J. Reichard

Committee Charge

The charge was to review and recommend nominees for Distinguished Membership and Outstanding Service Awards, accept and approve Emeritus Membership applications, maintain membership lists, recommend policy and procedures to better serve the membership and review requests by regional groups to affiliate with AIR.

Committee Objectives

1. To generate more non-AIR participation in the Forum
2. To explore helping regional groups with publishing their proceedings
3. To investigate making Research in Higher Education part of the membership dues
4. To establish a Speakers Bureau for the purpose of speakers addressing regional or state group meetings
5. To establish and maintain a mailing list for regional and state AIR groups
6. To offer Newcomer workshops to state and regional AIR groups
7. To redesign the membership Dues Renewal Notice form or design a separate data instrument so historical information can be stored and accessed from the computer
8. To study AIR member characteristics
9. To investigate the possibility of an Outstanding Dissertation Award and/or Outstanding Research Award
10. To establish a "criteria sheet" for the Outstanding Service Award to evaluate OSA nominees.

Committee Activities

1. Several ideas to increase non-AIR participation in Forum activities were submitted to the 1981 Forum Chair, John Chase.
2. The idea to help regional groups publish their proceedings was not endorsed by the Executive Committee because of the increased staffing requirements which would be needed in AIR central office.
3. The Publications Board is exploring the possibility of including Research in Higher Education as part of membership dues.
4. AIR Speakers Bureau proposal was referred to the Affiliated Groups Committee. (See Chairperson Suzanne Larsen's Annual Report.)
5. Mailing lists for regional and state groups proposal was referred to the Affiliated Groups Committee. (See Chairperson Suzanne Larsen's Annual Report.)
6. A proposal regarding worshops for state/regional groups is included in the Annual Report of the Affiliated Groups Committee.
7. There was continued exploration of a suitable instrument for obtaining membership characteristics.
8. The establishment of an Outstanding Dissertation Award and/or Outstanding Research Award was not endorsed by the Executive Committee. The feeling was that there are enough AIR awards now.
9. A "criteria sheet" to assess Outstanding Service Award nominees' qualifications was designed by Oscar Lenning and was implemented this year.

Recommendations

1. Membership is growing 10-12% a year which is probably fast enough for the organization to adapt gradually. New efforts are being made to expand AIR services to affiliated, regional, state and provincial groups. These are being coordinated with the Affiliated Groups Committee. The end results should be growth in AIR members and more overall services to the membership.
2. Another recommendation is a better understanding of AIR member characteristics. If we are, in fact, "the" association in higher education which studies institutions and their members, we should have a continuous data base on our own members. A data gathering mechanism needs to be developed to acquire AIR membership characteristics and interests.
3. Recognizing institutional research leaders should be more conscientiously done every year. More effort needs to be made to search for these people, get them nominated and award them for their achievements.

ANNUAL REPORT OF THE SITE SELECTION COMMITTEE

W. Sam Adams, Chair

Committee members: Gerald H. Gaither, Barbara Holmes, John A. Muffo, and William L. Tetlow

Committee Charge

The charge was to investigate future AIR Forum sites, conduct periodic site selection preference surveys of the AIR membership, and review and recommend to the Executive Committee Forum site proposals and Local Arrangements Chairpersons.

Committee Goals

1. Select and finalize AIR Forum sites for 1983, 1984, 1985.
2. Develop a model contract to be used with host hotels.

Committee Activities

1. Leamington Hotel, Minneapolis, Minnesota, will be the 1981 AIR Forum site. The dates of the Forum are Sunday, May 17-Thursday May 21. The Local Arrangements Chairperson is Janis H. Weiss, North Hennepin Community College.
2. Denver Hilton Hotel, Denver, Colorado, will be the 1982 Forum site. The Forum dates are Sunday, May 16-Thursday, May 20. The Local Arrangements Chairperson is Ralph Henard, University of Colorado at Denver.
3. The Sheraton Centre, Toronto, Ontario, will be the 1983 AIR Forum site. The Forum dates are Monday, May 23-Friday, May 27. The change in week days is due to a Canadian holiday. The Local Arrangements Chairperson is Edward Desrosiers, Council of Ontario Universities.
4. The 1984 Forum site is still being investigated. St. Louis, Nashville, and Dallas-Fort Worth are particular cities being discussed.
5. The 1985 Forum site will likely be on the West Coast, since Denver was selected for 1982. Invitations have been received from Vancouver, British Columbia, and Portland, Oregon.

Committee Recommendations

1. Finalize 1984 and 1985 Forum sites by December 1980.
2. Construct alternative proposals for arranging site selection and contracting with hotels in the future. As AIR becomes larger, the possibility of employing a professional in conventions appears more likely.

ANNUAL REPORT OF THE PUBLICATIONS BOARD

Gerald W. McLaughlin (1980), Chair

Board Members: Alfred L. Cooke (1980); John A. Lucas (1980); Marilyn McCoy (1982); Joan S. Stark (1981); and Norman P. Uhl (1982)

Editors and Ex-Officio Members: Mary E. Corcoran, Forum Publications; Charles F. Elton, Research In Higher Education; Douglas A. Mathewson, Newsletter; Richard R. Perry, Professional File; and Marvin W. Peterson, New Directions for Institutional Research

Associate Editors: Cameron L. Fincher, Research In Higher Education; and Paul J. Staskey, Forum Proceedings

As the Association has grown and become stronger, its publications have also increased in strength. This effort to maintain the highest quality of professional communication has made the work of the Publications Board a very rewarding experience. This does not mean by any criterion that we in AIR can rest on our laurels as many of the efforts have created new challenges as well as notable accomplishments.

Continuing Publications

1979 Forum Publications

Papers presented at the 1979 Forum have been made available to members through the ERIC system as noted on the list sent with the Forum Proceedings. Also, select papers were published in the second Forum issue of Research in Higher Education (RIHE). This issue will soon be sent free to all Association members, and current plans are to continue this procedure in the future. We are very interested in member comments. Mary Corcoran, Editor of Forum Publications, has continued, with the help of AIR members, to strengthen the quality of papers which are published in RIHE and indexed by ERIC. Paul Staskey served as Associate Editor for 1979.

New Directions for Institutional Research (NDIR)

The NDIR publication has become a self-supporting operation, and a new contract has been signed with Jossey-Bass. Marvin Peterson continues as Editor. Editors and topics for 1980 include the following:

Eugene Craven: Alternative Models of Academic Program Evaluation
Paul Dressel: The Autonomy of Public Colleges
Joe Henry: Institutional Impacts of Alternative Forms of Student Financial Aid
Richard B. Heydinger: Emerging Approaches to Academic Program Planning

Newsletter

Douglas Mathewson is completing his outstanding tenure as Editor of the Newsletter. This year has seen an emphasis on issues relevant to the professional development of Association members as well as other new developments.

Professional File

Four articles have now been published by the Professional File, and it is well on the road to filling a major role in our publication effort. Richard R. Perry, the Editor, is interested in hearing from members who are willing to share their insights on institutional research methodology and operations which have promise for utility in a number of institutional settings.

Research in Higher Education (RIHE)

Under the leadership of Charles F. Elton, Editor, and with the help of Paul Hoeber, APS Publications, the journal had a 16% growth in subscriptions last year and now has over 1000 subscribers. Much of this growth came from the 50% increase in the number of AIR members who subscribed at the special rate. Cameron Fincher continues to inform us of special topics of interest "Between Forums" as the AIR Associate Editor.

New Publications

New Monographs

Memorandum to a Newcomer to the Field of Institutional Research is being replaced by two new monographs. Joe Saupe has been developing a document on the roles and goals of institutional research which is in final draft and is expected to be provided to the membership before our next Forum. There also are plans to develop a companion monograph on resources available for institutional research.

Other Activities

Silver Anniversary Publication

Norman Uhl is investigating the feasibility of developing a Silver Anniversary publication to mark the occurance of the 25th Annual Forum which will be upon us in a surprisingly short length of time.

Qualitative Aspects

Joan Stark is working in the area of possible publications which focus on qualitative aspects of institutional research, pursuing the concerns voiced by members at the 1979 Forum in San Diego.

AIR Discounts

AIR members continue to be eligible for discounts on RIHE and the AAHE-ERIC Research Report series.

ANNUAL REPORT OF THE AFFILIATED GROUPS COMMITTEE

Suzanne W. Larsen, Chair

Committee Members: Robert F. Grose, Eric A. Hillman, Loren B. Jung, Robert T. Littrell, Gary A. Rice, Woody Trautman, and Risdon J. Westen; also W. Sam Adams, Charles H. Belanger, and William F. Lasher (ex-officio)

Committee Charge

1. To prepare specific elements of a more aggressive program to aid regional associations
2. To assist in the evolution of the profession and to foster attainment of the aims and purposes of the Association through a vigorous program of direct assistance to regional and other groups.

Committee Goals

1. To define the subgroupings of the Association
2. To develop an organized method for assisting the continuation of the Special Interest Groups
3. To identify methods of assisting the subgroups of the Association that would be beneficial to its members
4. To provide an incentive for the subgroup to affiliate with the Association, resulting in benefit to both the subgroup and the Association.

Committee Activities

The committee, chosen to represent many of the subgroupings of the Association, came to agreement on the definition of subgroups within AIR. Two types of groups were identified: (1) a geographic type which will be referred to as regional, whether it is state, provincial, or nation related, and (2) a special interest type (SIG) which consists of people interested in the field of institutional research but, more particularly, in some certain phase of that field not necessarily of interest to the entire membership. The differentiation of the two groups is important when considering the charge of the committee--affiliation with AIR. The primary meeting of a SIG would probably be at the Forum. A Regional Group would have its primary meeting in its geographical area.

Types of assistance that could be given to subgroups had been suggested by various members of the Association. The committee ranked these suggestions as they felt their group(s) could benefit. One suggestion has already been implemented: membership lists and/or labels are now available to a regional or special interest group, or prospective group, if said request is approved by the President of the Association. This list (or set of labels) is generated from the AIR Directory file.

Recommendations

The benefits for an AIR subgroup or proposed subgroup should include the following: (1) a time slot provided during the AIR Forum, (2) the provision of a membership list and/or labels to enable the group to reach its constituents, and (3) access to names of AIR members who have agreed to be listed in the AIR Speakers Bureau--a proposed list of AIR members who would be willing to address AIR subgroups on an expense only basis. The topics would be specified by the listed speaker. These speakers could be used by the special interest groups at the Forum, but it would be expected that no expenses would be allowed in this situation.

The benefits for an AIR-affiliated subgroup would be more extensive. An additional criterion for awarding these benefits would be that a majority of the affiliated subgroup be AIR members. For 1980-81, the following benefits have been proposed for affiliated groups (not available at Forum meetings):

1. Up to $250 would be available to an affiliated group to provide expenses for keynote speakers to address said group. This would require a written request to the President of AIR from the liaison member of the affiliated group for a specific purpose, as stated, giving the amound needed, time of presentation, and any other pertinent information that might enhance the request on behalf of the group represented. A specified amount of money would be available to provide this support. The requests would be weighed according to the purpose of the program, the number of people benefiting from the presentation, and how the needs of the group fit into the total commitment of the Association.
2. AIR Newcomers or Topical Workshops would be made available to subgroups, as requested and available. These would be expected to be self-supporting.

   Requests by an affiliated group for a workshop would be made to the President of AIR by the liaison member of the group. Supporting infomation such as target population, time and location for proposed workshop, and other pertinent information would accompany the request. (The AIR president has appointed a committee to study the feasibility of establishing a Board which would monitor the development, procurment, and dissemination of workshops. If such a board were established, the request would probably be made to the chair.)

The goal of the plan for subgroups and affiliation is to expand membership in AIR through subgroup enrichment. Advantages of AIR membership, at present, include the free publications (*Newsletter* and *Professional File*) which promote identification with the profession of institutional research and keeping up with trends in the profession. The addition of mailing lists and labels, as well as access to the names of members who have agreed to speak to subgroups on selected topics of interest and at no cost other than expenses, will be available to all subgroups or proposed subgroups of the Association. Mailing lists and labels will assist groups in planning or organizing their meetings. They could be especially helpful to special interest groups or to the organization of the new regional groups. A Speakers Bureau could be beneficial to either regional or special interest groups to provide topics of interest to their constituents.

Through affiliation, further advantages could accrue to the subgroups. Financial support from AIR might enable groups to invite keynote speakers to address their members. This type of exposure to experts in various areas could provide a valuable service to institutional researchers, especially those who are unable to attend the Forum. Professional workshops could be made available to the members. In reaching the many, hopefully, strength would come to the Association and to the profession of institutional research.

ANNUAL REPORT OF THE COMMITTEE OF CORRESPONDENTS

Charles H. Belanger, Chair

Committee Members: John Iva Anderson, John Calvert, Aidan Duggan, Michel G. Hecquet, Martha M. Hinman, Humberto Lopez-Delgadillo, Thaly Nilsson, Zuhair Warwar, and Robert Winter

Committee Charge

The committee's charge was to translate into working mechanisms the renewed AIR commitment to extend its objectives and activities to the international community of institutional researchers and planners and to encourage exchange of information and interaction of professionals on a worldwide basis.

Committee Objectives for 1979-80

1. Establish a coordinated network of individuals dedicated to the development of institutional research and its practioners outside North America.
2. Identify individuals, institutions, and agencies potentially interested in AIR objectives and preoccupations.
3. Test the idea of holding a "Trailer Forum" as a means to promote exchange and development.

Committee activities

1. Hold a meeting in Paris to exchange with Europeans on the setting up of their own association and test the idea of the Trailer Forum. Eighteen of the thirty participants representing thirteen countries made presentations on various themes and issues. A planning committee was formed by Europeans to organize a similar meeting in England in November 1980.
2. Invite a well-known non-North American (Dr. Zeeman) to be one of the major speakers at the Atlanta Forum.
3. Interact with the Forum Organization Subcommittee chairs to integrate more international members into various regular activities at the Forum.
4. Provide the Executive Office with a list of persons who will be approached to join AIR in the upcoming year.

Committee Recommendations

1. Launch a well-orchestrated recruitment campaign led by the Executive Office with the help of the various correspondents in order to reach a critical mass of international members.
2. Form a Forum Organization Subcommittee on International Activities to monitor the international content and participation in the 1981 Forum.
3. Hold a meeting in Latin America to exchange views and test the idea of the Trailer Forum in that part of the world.
4. Encourage AIR North American members to participate in non-North American institutional research meetings.
5. Explore how various publications and activities which affect our profession could sustain our international thrust.

ANNUAL REPORT OF THE POLICY ANALYSIS COMMITTEE

Molly Corbett Broad, Chair

Committee members: Tommy Annas, Cathy Henderson, and Dennis P. Jones

Charge

The charge to the Policy Analysis Committee reflects the continuing interest of the Association and its members in the data collection activities of the U. S. federal government. Strides have been made in improving the operating procedures and diminishing institutional burdens associated with data collection activities. In addition, the Policy Analysis Committee is interested in the research utilization of these data by the higher educational associations and the federal government in developing positions for public policy action.

Activities

Among the activities undertaken during 1979-80 has been participation in the Higher Education Advisory Panel to NCES. Among the issues addressed by that body have been the following:

1. Vocational Education Data System (VEDS). This is a new data collection effort mandated by Congress, covering students, staff, and finances of vocational education programs. In order to address the administrative burden upon institutions for reporting these data, and to secure a broader understanding, a VEDS Task Force was created. Membership reflected constituent concerns and was coordinated by the American Association of Community and Junior Colleges.
2. Physical Facilities Inventory. NCES presented the report and assessed the results of the HEGIS survey undertaken in Fall 1978 on the costs to colleges and universities of compliance with Section 504 of the Rehabilitation Act of 1973. This study surveyed a stratified sample of 700 institutions with follow-up site visitations to 138. When extrapolated to the entire postsecondary education sector, the costs of assuring building accessibility to mobility-impaired students were estimated to be $561 million.

3. Higher Education Classification System. Various projects to review institutional taxonomies were examined. The Carnegie classification scheme will be supported by ACE upon completion of the Carnegie Council's work. The National Center for Higher Education Management Systems (NCHEMS) is also developing an institutional classification scheme based entirely on the HEGIS survey of earned degrees.
4. The NCES Higher Education Panel. The Panel reviewed the conceptual framework and need for various price indices in higher education, e.g., academic expenditures, student charges, research spending. The higher education price index (HEPI) that was developed by NIE will be continued, after the current year, by NCES or a private concern. Since HEPI is no longer in a developmental stage, NIE is no longer an appropriate home for it.
5. Federal Data Acquisition Council (FEDAC). Mandated by the Control of Paperwork Amendment of 1978, the purpose of FEDAC is to review all educational data acquisition plans by federal agencies in order to reduce the paperwork burden imposed on educational institutions and agencies. Additionally, review by FEDAC should help federal agencies collect information more efficiently. Agencies must submit the proposed instruments, justification of purpose, sampling procedures and cost/burden estimate. FEDAC is chaired by Fred Bohen, HEW's Assistant Secretary for Management and Budget, and includes public members, representing educational institutions and organizations, as well as federal government members.
6. The status of various data collection and dissemination activities. Under sponsorship from the associations and/or the federal government, this was reported and discussed by the panel.
7. Quality of Institutional Data. On January 24, 1980, the panel proposed to NCES that a committee be convened to help improve the quality of institutional data reports to NCES. A major emphasis of the committee would be to develop leadership among chief executive officers of colleges and universities for improving the quality of data reported to NCES and then utilized in advancing public policy positions. It has been recommended that the committee include representatives from the following associations: ACE, NACUBO, AACRAO, SHEEO and AIR.

   AIR has also been invited to membership in a new policy analysis venture in Washington. The Interassociation Council for Policy Analysis and Research (ICPAR) was created during Fall 1979, under leadership from the ACE and involving a wide spectrum of higher education associations. An advisory group with representatives from each association will establish priorities for policy analysis and review work in progress. A new senior-level position has been created at ACE to direct the work of ICPAR utilizing staff in the Policy Analysis and Economic Analysis divisions of ACE. Participation in ICPAR requires a dues contribution of $500 annually and participation in the monthly meeting of the advisory group.

Recommendations

1. To continue participation in the Higher Education Advisory Panel to NCES--approximately six meetings per year in Washington, D.C.
2. To designate a representative to the new NCES task force to improve the quality of institutional data. A plan of action for this group has not yet been developed; the reimbursement of travel costs by NCES should be explored.
3. To postpone the decision on participation in ICPAR for reconsideration following the report on opportunities and strategies for expanding programs for professional development.
4. Budget for 1980-81 of up to $1,000.

REPORT OF SELF-STUDY COMMITTEE
AIR DIRECTORATE

Donald C. LeLong, Chair

Committee members: George Beatty, Jr. and Bernard S. Sheehan

Summary of Recommendations

Publications

1. We recommend that the Executive Secretary, working within policies set by the Publications Board and the Executive Committee, accept responsibility for the preparation, production, and distribution of the Forum program and related materials, the directory, and other administrative papers, pamphlets, or documents which the President might direct.
2. We recommend that the "AIR Annual Forum Proceedings" be compiled in the Executive Office and that the Executive Secretary be responsible for the production and distribution of the Proceedings.
3. We recommend that the preparation, production, and distribution of the Newsletter be the responsibility of the Executive Secretary and that the position of "newsletter editor" be abolished.

Membership Maintenance/Building

We recommend that the Executive Office effort devoted to membership-building activities be increased by the equivalent of approximately a half-time person. The actual effort will have to be divided among the Executive Secretary, the secretarial staff, possibly the graduate assistant. (See recommendations under Personnel, below.)

Analytical Support

1. We recommend that the Executive Office effort devoted to analytical studies of important operational and policy problems be increased by the equivalent of one half-time person. (See recommendations under Personnel, below.) The specific subjects of study should be identified by the President, other Executive Committee members, or the Executive Secretary, and the more time-consuming studies should be approved by the Executive Committee.
2. We recommend that analytical support activities be supervised either by the Executive Secretary, the FSU Liaison Officer, or other on-site AIR member, depending upon the subject of the study. (Under the terms of agreement between AIR and FSU, the Liaison Officer is to be a faculty member "available to consult and advise on a wide variety of institutional research topics.")

Support for Professional Development Activities

We recommend that the Association appoint an experienced and competent person, for a period of approximately nine months, to explore the opportunities and mechanisms through which the Association might expand and improve its programs devoted to the professional development of institutional researchers and the development of the profession of institutional research. The appointee would be expected to report progress to the President and to the Executive Committee periodically and submit a final report proposing a plan or alternative plans for further action. (See recommendations under Personnel, below.)

Contract Negotiations

We recommend that the Executive Office be empowered to retain a competent and experienced contract negotiator to work with the Site Selection Committee, on a consultative basis, in negotiating the Forum facilities, equipment, and services, once the Forum city has been approved. Retention of a negotiator might be on an individual Forum or continuing basis, but the employment agreement(s) should be approved by the President of the Association.

Personnel

1. We recommend that an additional full-time, 9-month secretarial position be created and funded in the Office to handle office tasks as assigned by the Executive Secretary.
2. We recommend that salaries and fringe benefits of both professional and support staff employed in the Executive Office be equivalent to those offered at Florida State University, the environment in which the Office is located. We further recommend that the Treasurer of the Association be assigned to conduct, at least biennually, a survey of salaries and fringe benefits for positions comparable to those in the Executive Office. The survey should include positions of equivalent responsibility at Florida State University. In the case of professional employees, it may include associations comparable to AIR because equivalent positions may not exist on the FSU campus. Results of the survey should be submitted to the President of the Association for use in establishing compensation levels within the Office.
3. We recommend that the Association sign contracts with personnel employed in positions approved by the Executive Committee. After a probationary period of approximately six months, contracts should provide for at least three months' notice of termination and should be renewed as long as the employee's performance is satisfactory and as long as the position is funded in Tallahassee.
4. We recommend that approximately $25,000 be made available for expenses related to appointment of a person, for a period of approximately nine months, to research and propose plans to enhance the Association's professional development programs. The person might or might not be housed at the Executive Office, depending upon mutually agreeable terms of appointment.

Orientation of New Executive Committee Members

We recommend that the incoming President of the Association be assigned responsibility for conducting a thorough orientation for new members of the Executive Committee and that the orientation be carried out with substantial assistance from the Executive Secretary. This will ensure that both major elements of the Executive Directorate are fully explained to new members, and it will help them carry out their roles more knowledgeably.

Background and Assumptions

In July of 1979, President Craig Johnson recommended to the Executive Committee that a self-study be conducted of the operation of the Executive Directorate of the Association. He defined the Executive Directorate as the Executive Office plus the Executive Committee in its administrative (rather than legislative) role, and the working relationships between the Executive Office and the Executive Committee. President Johnson observed that the Executive Office had been in operation for five years, its functions and activities had grown substantially during that period, and that as good management practice its operations should be reviewed He also observed that there appeared to be no urgent problem or crisis and that it was a good time for overall performance review.

The President recommended a committee of three to conduct the self-study: George Beatty of the University of Massachusetts, Donald LeLong of the University of Texas System (chair), and Bernard Sheehan of the

University of Calgary. Mr. Beatty is Vice President of the Association; Mr. Lelong was President of AIR during 1973-74 when the Executive Office was created, and Mr. Sheehan was AIR President in 1975-76, the second year of Executive Office operation. The President also recommended that the Committee be charged with the following:

1. Reviewing the original charge of the Executive Office
2. Assessing the level of satisfaction expressed by the Executive Committee with the operation of the office
3. Assessing the level of satisfaction of Executive Office staff with the structure, functions, policies, and performance of the Executive Committee as it is related to the Executive Office
4. Recommending changes in the following, if and as deemed appropriate:
    a. The original charge of the Executive Office
    b. The structure, functions, policies, and performance of the Executive Office
    c. The structure, functions, policies, and performance of the Executive Committee with respect to its administrative responsibilities
    d. Working relationships between the Executive Office and Executive Committee. (While relationships between the Executive Directorate and members of the Association constitute an equally important subject, that was not part of the agenda for this study.)

The Executive Committee approved the President's recommendation with the understanding that "the primary emphasis will be to recommend any changes necessary to ensure the future growth and development of the Association for Institutional Research."

In writing this report, it has been necessary for the Self-Study Committee to make several basic assumptions. These are that AIR will remain an association of individual members, dedicated to the following purposes: serving those members in their professional development as institutional researchers and serving institutional research as a profession. Our further understanding is that, according to the developing traditions of the Association, no one individual really can or should speak officially for the Association, its diverse membership, or for the members' institutions on matters of higher education policy. (See Declaration on Institutional Research, AIR, 1972.) The President and Executive Committee members do speak officially for the Association on many administrative matters. These assumptions are germain to the later discussion of whether or not the Association should have an Executive Director.

Procedures Followed by the Self-Study Committee

To elicit reaction by Executive Committee members to the performance of the Executive Office, a brief questionnaire was sent to the twenty members who served on the Executive Committee during 1977-78, 1978-79, and 1979-80. A copy of that questionnaire, including a tabulation of the thirteen responses, is attached as Appendix A. (Note: this appendix is not being reproduced for the Annual Business Meeting packet but is available, upon request, from the Executive Office.)

On January 22 and 23, the Self-Study Committee met at the Executive Office in Tallahassee and held extensive conversations with the Executive Secretary, officials of Florida State University, and Craig Johnson in his two roles: as President of AIR and as Liaison Officer between the Association and Florida State University. During and following those meetings, some analyses of Executive Office staff salaries and fringe benefits were carried out and a draft report written. The draft report was reviewed by the Executive Committee at its meeting of March 26-28.

General Review

The original purposes in establishing an Executive Office are being well served. By 1973, AIR had grown to the point where its membership and financial operations could no longer be conducted in an efficient, coordinated manner by members of the Executive Committee. They were spread around the country and had varying amounts of local clerical support. Furthermore, the administrative and clerical burdens placed on the home institutions of AIR executive officers and committee chairpersons had become, in the view of some, unreasonable and unfair. The Executive Office now carries most of the administrative and clerical workload with respect to membership services, membership promotion, financial administration, Forum promotion and registration, administrative publications, Association mailings, AIR records and archives, and general Executive Committee administrative support.

In all but two of the foregoing activities, the respondents to the Executive Committee questionnaire rated Executive Office performance good-to-excellent. Performance on records/archives and general Executive Committee administrative support were rated satisfactory-to-good. The latter area is addressed in subsequent recommendations. Written comments on questionnaire responses further confirm a high degree of satisfaction with the operation of the Executive Office and the performance of the Executive Secretary. Several comments suggest that it would be difficult to improve or expand Executive Office performance without additional staff. The question of whether or not the Association should employ an Executive Director rather than an Executive Secretary to head the office was asked and a slight majority favored the Executive Secretary "philosophy" to Office operations. Those favoring an Executive Director generally cited the desirability of including leadership in the development of the profession as one of the position responsibilities. This issue will also be addressed in the recommendations which follow.

The present office site in Tallahassee was regarded as satisfactory or better than satisfactory by most questionnaire respondents. Those coming from the West noted significant inconvenience. Given the present functions of the Office, most seemed to feel that location is not an extremely important issue.

The Executive Secretary expressed a high degree of satisfaction with the working relationships between the Executive Office and the Executive Committee. There appears to be no material difference between the perception of the Executive Secretary and Committee members as to functions to be performed by the Office, and the Executive Secretary can typically get clear direction on specific matters when she asks for it. Executive Committee members do not "over supervise" the functions which the Office performs in their areas of responsibility. However, as the Office has taken on additional tasks and responsibilities at the request of the Executive Committee and its individual members, these have frequently been worked out informally; they are not delineated in writing. Therefore, the division of labor between the Office and not only the Executive Committee but other AIR committees is not always clear, particularly to new committee members and chairpersons. In fact, this working division of labor has shifted from one chairperson to the next, usually in the direction of greater workload and responsibility for the Executive Office.

Questionnaire respondents expressed some dissatisfaction in the conduct of Executive Committee business. Several comments were made to the effect that the Committee spends too much of its time on detail and insufficient time on broader issues and policies having to do with service to members and the Association's future. The Committee appears not to have available the kinds of policy analysis which would assist it in coming to grips with some of these broader issues. One or two expressed the view that new members of the Executive Committee need a more comprehensive and thorough orientation to the policies, procedures, and precedents of the Executive Directorate. Several members expressed concern over the need to take more initiative in expanding and improving the range of AIR programs which provide members with an opportunity for further professional development.

Finally, relationships between the Association, including its Executive Office, and Florida State University appear to be most satisfactory. Arrangements for the provision of space and other Executive Office support are under the purview of the College of Education. The Self-Study group met with the Dean of Education, the Academic Vice President, and the President of the University, all of whom expressed satisfaction with the relationship from their respective viewpoints. Craig Johnson, who has been acting as the Liaison Officer between the University and the Executive Office since its inception, also views the relationship as mutually beneficial; he is not aware of any significant problem. He has followed a policy of making himself available to the Executive Secretary, the AIR President, and the University on matters pertinent to the operation of the Executive Office, but he has also made it a policy not to initiate or intrude in AIR matters unless asked.

Recommendations

Publications

Over the years since the inception of the Executive Office, there has been a transfer of publication-related activities from individual officers and committees to the Executive Office. At the time of the establishment of the Executive Office, it was agreed that the Executive Office would coordinate certain administrative affairs and, in particular, would promote sales of Association publications, send out regular mailings to members about the Association publications, develop a reference library of Association publications, and design and print for the Publications Board a membership directory, an annotated bibliography, and other items for officers and committees as possible and appropriate.

It is the intent of the following recommendations merely to recognize the continuing evolution formally and to suggest that changes implied in the Publications Board Terms of Reference and other AIR operational guidelines be made and ratified, as required. It is important to emphasize that we do not see these recommendations as ones which would change the essential policy of AIR with respect to publications nor the central role of the Publications Board as set out in the preamble of the Publications Board Terms of Reference: "The general charge given the Publications Board of the Association for Institutional Research by the Executive Committee is 'to give direction and supervision to the publications activities of the Association.'"

These recommendations would remove from the Publications Board some of the detailed administrative work which may in the past have commanded the time of members and, hence, to that extent, robbed them of the opportunity to spend their energies on policy related to scholarly and professional matters.

Recommendation 1. We recommend that the Executive Secretary, working within policies set by the Publications Board and the Executive Committee, accept responsibility for the preparation, production, and distribution of the Forum program and related materials, the directory, and other administrative papers, pamphlets, or documents which the President might direct.

The purpose of this recommendation is to remove any ambiguity on the question of responsibility for what are now routine, administrative publications which have been produced successfully in the Executive Office for a number of years. We understand that this recommendation states current practice, one we feel is desirable and one which should be explicit Association policy. The phrase "which the President may direct" is to provide the Executive Secretary with a recourse to direction between Executive Committee or Publications Board meetings.

Recommendation 2. We recommend that the "AIR Annual Forum Proceedings" be compiled in the Executive Office and that the Executive Secretary be responsible for the production and distribution of the Proceedings.

There is currently no editor of the Proceedings, per se, and nothing in this recommendation reduces the policy jurisdiction of the Publications Board nor the Editor, Forum Publications. We considered the possibility that the Executive Secretary be named editor of this annual publication. However, we became convinced that the editorial work involved is substantially different than that required to prepare the ERIC Collection of Forum Papers and that done by the editors of New Directions, the Professional File, or the Journal, and is more akin to that copy editing required for other Forum publications. Also, we did not want to raise questions about the merit of an AIR staff member sitting as a voting member of an AIR policy board. Hence, we concluded that there is no need to name the Executive Secretary editor of the Proceedings.

Recommendation 3. We recommend that the preparation, production, and distribution of the Newsletter be the responsibility of the Executive Secretary and that the position of "newsletter editor" be abolished.

This recommendation does not imply dissatisfaction with the services contributed by the incumbent editor, nor his predecessors. It is our judgment that the Newsletter has rightly evolved into a house organ routinely compiled, for all intents and purposes, by the Executive Secretary. If it did not currently exist as an effective house organ, one would indeed have to be created as a means for the Executive Directorate to communicate with the AIR membership. The Newsletter predates the New Directions series, the Professional File, the ERIC Collection of Forum Papers, and the Journal; indeed, it predates the Publications Board and the Executive Office. We concluded that the Association ought to now recognize and encourage the current role of the Newsletter and of the Executive Secretary in producing it.

Membership Maintenance/Building

Recommendation. We recommend that the Executive Office effort devoted to membership-building activities be increased by the equivalent of approximately a half-time person. The actual effort will have to be divided among the Executive Secretary, the secretarial staff, and possibly the graduate assistant. (See recommendations under Personnel, below.)

One of the principal reasons for establishing the Executive Office was to ensure a stable/growing membership and to serve members more effectively. During the few years just prior to the establishment of the Office, membership dropped slightly, and that drop was attributed to lack of efficient and coordinated handling of membership fees, renewals, etc. Since establishment of the Office, AIR membership has almost doubled. However, there are additional membership-building activities which could take place if Office staff were available to undertake them. These include analysis of the members who do not renew and why, membership building in states and regions where our membership seems disproportionately low, and inquiries concerning additional membership in institutions where we already have one or more members. Membership maintenance/building activity will become even more important in the future as inflation squeezes individual and institutional budgets and as the Association finds it necessary to increase membership fees.

Office staffing is currently such that the half-time graduate assistant spends a good deal of time handling essentially clerical membership tasks, and that person's time could be better spent on assignments more appropriate to a graduate assistant (particularly inasmuch as the graduate assistantship is funded by Florida State University).

Analytical Support

Recommendation 1. We recommend that the Executive Office effort devoted to analytical studies of important operational and policy problems be increased by the equivalent of one half-time person. (See recommendations under Personnel, below.) The specific subjects of study should be identified by the President, other Executive Committee members, or the Executive Secretary, and the more time-consuming studies should be approved by the Executive Committee.

Recommendation 2. We recommend that analytical support activities be supervised either by the Executive Secretary, the FSU Liaison Officer, or other on-site AIR member, depending upon the subject of the study. (Under the terms of agreement between AIR and FSU, the Liaison Officer is to be a faculty member "available to consult and advise on a wide variety of institutional research topics.")

Executive Committee members themselves, as well as some others in the Association, are apparently frustrated by the amount of time spent by the Executive Directorate on housekeeping decisions and administrative detail. While the creation of an Executive Office has removed a substantial administrative and clerical burden from the shoulders of many Association officers, committee chairpersons, and committee members, apparently it has not resulted in the Executive Committee concentrating its efforts on the larger issues of the future development of the Association and, particularly, on the direction and rationale of its professional development programs. We perceive that one source of frustration is the absence of adequate analytical staff support to research the issues, a situation common to many committees. That is in part revealed by the satisfactory-to-good rating given by respondents to the questionnaire item "General Executive Committee Support."

Support for Professional Development Activities

Recommendation. We recommend that the Association appoint an experienced and competent person, for a period of approximately nine months, to explore the opportunities and mechanisms through which the Association might expand and improve its programs devoted to the professional development of institutional researchers and the development of the profession of institutional research. The appointee would be expected to report progress to the President and to the Executive Committee periodically and submit a final report proposing a plan or alternative plans for further action. (See recommendations under Personnel, below.)

The major programs of the Association are designed to assist institutional researchers in their own professional development. These include the annual Forum, the publications program, workshops and, to a lesser extent, liaison with affiliated groups and other associations. Active members of the Association have long been interested in ensuring that AIR provides to its membership the best possible professional development services. (See "Report of Past President Panel: AIR in the Eighties," San Diego, 1979.) One important element in the frequent discussion of whether the Association should have an Executive Director or an Executive Secretary arises from the question of whether or not the Executive Office should assume responsibility for professional development programs.

In our judgment, the Association's present situation with respect to professional development programs is very similar to its situation six years ago with respect to administrative operations. The professional programs of AIR have probably developed as well as the membership can expect, given the fact that they are managed by chairpersons who bootleg time and institutional resources from their home institutions. Coordination and further development of professional activities such as the Forum, regional workshops, and programs of affiliated groups is potentially a significant problem, but even more significant are the opportunities lost for other programs because no single individual has the time or the assigned responsibility. (For example, NCHEMS is running regional workshops on improving student assessment, and all five workshop leaders are members of AIR.)

Contract Negotiations

Recommendation. We recommend that the Executive Office be empowered to retain a competent and experienced contract negotiator to work with the Site Selection Committee, on a consultative basis, in negotiating for Forum facilities, equipment, and services, once the Forum city has been approved. Retention of a negotiator might be on an individual Forum or continuing basis, but the employment agreement(s) should be approved by the President of the Association.

Because of the dollar value and complexity of the contract between the Association and the hotel housing the annual Forum, negotiations require an experienced and knowledgeable person to ensure that AIR interests are adequately protected. Present arrangements under which these negotiations are handled by the Site Selection Committee have been satisfactory, and in some cases superb, but they are not ideal. Membership turnover requires the continual education of new negotiators which is time consuming. Inexperienced negotiation is potentially costly to the Association.

Personnel

Recommendation 1. We recommend that an additional full-time, nine-month secretarial position be created and funded in the Office to handle office tasks as assigned by the Executive Secretary.

Recommendation 2. We recommend that salaries and fringe benefits of both professional and support staff employed in the Executive Office be equivalent to those offered at Florida State University, the environment in which the Office is located. We further recommend that the Treasurer of the Association be assigned to conduct, at least biennually, a survey of salaries and fringe benefits for positions comparable to those in the Executive Office. The survey should include positions of equivalent responsibility at Florida State University. In the case of professional employees, it may include associations comparable to AIR because equivalent positions may not exist on the FSU campus. Results of the survey should be submitted to the President of the Association for use in establishing compensation levels within the Office.

Recommendation 3. We recommend that the Association sign contracts with personnel employed in positions approved by the Executive Committee. After a probationary period of approximately six months, contracts should provide for at least three-months' notice of termination and should be renewed as long as the employee's performance is satisfactory and as long as the position is funded in Tallahassee.

Recommendation 4. We recommend that approximately $25,000 be made available for expenses related to appointment of a person, for a period of approximately nine months, to research and propose plans to enhance the Association's professional development programs. The person might or might not be housed at the Executive Office, depending upon mutually agreeable terms of appointment.

Most of these recommendations serve to implement recommendations made in previous sections. However, some have to do simply with workload and terms of employment.

Several comments on the returned questionnaires and other oral comments by members of the Executive Committee led us to consideration of workloads, salaries, and fringe benefits of Executive Office staff. The present office staff consists of a full-time Executive Secretary, full-time secretary, and half-time graduate assistant. In addition, approximately $2,700 is expended annually on hourly help. In response to our question, the Executive Secretary estimated that she has put in approximately 20 days of overtime during the past year, some of which was balanced by compensatory time and some of which she said she would prefer to put in under any circumstances. Other members of the staff have been required to put in virtually no overtime.

The present staffing arrangement is adequate to keep up with the daily tasks required of the Office. However, because of our growing membership and because the Executive Office has gradually absorbed tasks previously performed by committee chairpersons and their institutional staffs, Executive Office workload continues to increase gradually. More important, membership-building activities and analytical projects are continually postponed. The additional secretarial position would relieve the present graduate assistant of clerical duties, and it would also support additional membership-building activities (as well as professional development activities, if necessary).

We also conducted a brief analysis to compare the salary and fringe benefits of the Executive Secretary with positions of comparable (but not necessarily similar) responsibility at Florida State University and in associations similar to AIR. We found the Executive Secretary's compensation to be substantially below that earned by persons in comparable positions at FSU and also below compensation levels of comparable persons in other associations. An examination of full-time and part-time secretarial salaries and fringe benefits and those of hourly employees also indicated that AIR staff work side by side with personnel of equal skill and competence yet receive, on the average, less in terms of compensation. We feel very strongly that this situation should be remedied as soon as possible. Our recommendations would also give AIR employees greater employment security, though necessarily somewhat less than their colleagues at FSU.

Orientation of New Executive Committee Members

Recommendation. We recommend that the incoming President of the Association be assigned responsibility for conducting a thorough orientation for new members of the Executive Committee and that the orientation be carried out with substantial assistance from the Executive Secretary. This will ensure that both major elements of the Executive Directorate are fully explained to new members, and it will help them carry out their roles more knowledgeably.

One of the common difficulties of any Executive Directorate which includes a committee with rotating membership is that of providing adequate executive continuity. One of the original charges to the Executive Office was to assist the organization by providing that "Association memory" and administrative continuity. The Office has fulfilled this need to a great extent, but it does not have the authority to initiate such efforts for the Executive Committee members themselves. New members coming onto the Committee for 1979 did receive some formal orientation to assist them in carrying out their responsibilities, and that is, apparently, the first time such orientation was offered.

Implications of the Recommendations

An Executive Director vs. an Executive Secretary

We did not recommend a change in the title of the administrative officer of the Association. Once we had completed our discussions and formulated the recommendations above, the often-raised question of whether or not the Association should appoint an Executive Director appeared to us to be a non-issue. Our discussion led us to the conclusion that the historical character of the Association and its preferred character in the future should be that of an organization serving individual members of the profession. We came to the conclusion that even the President should not speak officially for the membership on national issues related to higher education, in part because ours is an international association. Under these conditions, an Executive Director certainly would not be qualified to assume that role. The other major issue with respect to the appointment of an Executive Director has to do with the need for a full-time person qualified to promote the professional development activities of AIR. We believe this is a need which should be fulfilled, but the person in that position could not easily carry out the responsibilities of the Executive Secretary and also promote professional development programs. Therefore, we foresee both administrative and professional development arms in the future of the Executive Office, operating in a cooperative and parallel manner and both reporting to the President of the Association. At the present time, we believe that the prime need is to think through and design the work of that professional development arm. Hence, our recommendation of a nine-month appointment.

President's Role

A final word needs to be said about the role of the President. The President must be delegated the responsibility for the supervision of the Executive Office. The alternative of having the Executive Office report to the membership or to the Executive Committee is to put the Executive Secretary in a position where he or she must assume fairly extensive powers, or put the Association in the position where the

Executive Secretary is forced to neglect certain decisions until the appropriate authority is assembled. It seems to us that the President must have the authority and responsibility to make some decisions which will have to be later ratified by the Executive Committee. It seems to us infinitely better that the President be in that awkward position than the staff of the Association.

Financial Implications

Our recommendations call for substantial additional expenditures. We believe, however, that they will ultimately produce additional revenues which will be comparable. When the Executive Office was created in 1974, the assumption of the Executive Committee was that the Association would operate at a deficit temporarily, drawing upon reserves. In actuality, reserves have accumulated more rapidly since the creation of an Executive Office than before. We believe that, again, the Association should be willing to operate at a deficit for two or three years, if necessary.

Among those recommendations which imply additional operating expense, our suggested priorities are the following:

		Approximate $
1.	Salary and fringe benefit adjustments for the Executive Secretary	$ 5,900
2.	Salary and fringe benefit adjustments for other Executive Office staff	2,719
3.	Appointment of an additional full-time, nine-month secretary, salary only	6,989
4.	Appointment of a full-time person for a period of nine months to research and propose a program of future professional development activities	25,000

PROPOSED BUDGET FOR FY 1980-81

William F. Lasher, Treasurer

Accompanying this is the Executive Committee's recommendation for the 1980-81 AIR budget. This budget is the result of the most comprehensive financial planning process undertaken during my tenure on the Executive Committee. Each member of the Executive Committee estimated the level of expenditure necessary to carry out the programs and activities for which he or she is responsible. They were then asked to defend these requests to the entire Executive Committee within the context of the total needs of the Association and obvious financial constraints.

The total of $149,815 represents a 26% increase over our current-year budget. This increase results from three main factors: (1) the effects of inflation, (2) new services to members, and (3) self-study recommendations.

Inflation: As in your home institutions or organizations and your personal budgets, AIR suffers from the effects of high inflation, but our situation is more complex because printing, supplies, and travel--items where the effects of inflation have been worse than for the economy in general--make up such major portions of the Association's budget. Thus, our costs have increased more rapidly than the general inflation rate.

New Services to Members: Included in this budget are several items designed to provide additional services to AIR members. These include additional administrative support to affiliated groups in the form of membership lists and mailing labels, the establishment of a Speakers Bureau designed to assist affiliated groups in attracting high quality speakers for their meetings, and the establishment of a board, analagous to the Publications Board, which will have oversight responsibility for the Association's in-service training programs.

Self-Study Recommendations: The following recommendations of the Self-Study Committee are included in this budget: (a) a salary and fringe benefit package for the Executive Secretary which is more in line with comparable positions in similar organizations and at Florida State University, (b) a more adequate compensation package for the office secretary position to avoid high turnover, and (c) the addition of a one-half-time clerk-typist to help with increasing Executive Office workload.

Several alternatives were discussed in order to fund this budget. The Executive Committee finally decided to use the dual approach of dipping into our financial reserves and increasing the Forum fee. Although it would have been possible to fund the recommended budget entirely from our financial reserves, it was quickly determined that such an action would be fiscally irresponsible. It would have so depleted those funds that substantial membership and Forum fee increases would have been necessary in future years. Therefore, the Executive Committee voted to establish a designated reserve fund of $50,000 for 1980-81, with the understanding that this amount would be reviewed on a regular basis. This action meant that other reserve funds could be used to help soften the effects of high inflation, provide some new services to the members, and not jeopardize AIR's financial future.

However, it is clear that these reserves are not limitless. Therefore, the Executive Committee decided that judicious use of reserves in conjunction with modest increases in membership or Forum fees was superior to relying exclusively on reserve funds and then being faced with the prospect of raising fees by an extreme amount in the future. As a result, it was decided that Forum fees should be increased by $15 and that $22,315 should be taken from reserves to balance the 1980-81 budget.

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

Proposed Budget, 1980-81

	1979-80 Approved Budget	1979-80 Adjusted Budget*	1980-81 Proposed Budget
Income			
Dues	$ 46,250	$ 46,250	$ 50,000
Forum fees	52,250	52,250	70,000
Publications sales	3,000	3,000	2,000
Workshop fees	8,000	8,000	-
Interest	4,500	4,500	5,000
Miscellaneous sources	500	500	500
Reserves	4,450	4,450	22,315
Total income	$118,950	$118,950	$149,815
Expense			
Salaries/Wages/Fringes	$ 30,000	$ 30,000	$ 42,300
General Administration	20,650	21,410	27,930
Nominations/Election	2,950	2,950	3,850
Membership	6,700	6,700	8,480
Forum	17,500	19,975	28,600
Associate Forum Chair	500	500	- **
Publications	24,150	24,150	25,455
Workshops	8,000	8,000	5,000
Other Committees	1,500	4,135	4,200
Program Development	4,000	0	-
Contingency	2,000	130	3,000
Capital Outlay	1,000	1,000	1,000
Total expense	$118,950	$118,950	$149,815

* as of 3/31/80

** included in Forum budget

ANNUAL REPORT OF THE WORKSHOPS COMMITTEE

John S. Chase, Chair

Committee members: Mark D. Johnson, John A. Lucas, and Donald J. Reichard

Committee Charge

1. To recommend procedures for improving the quality of Forum workshops
2. To oversee the development of institutes for the 1979-80 fiscal year
3. To make recommendations to the Executive Committee regarding workshops for regional/affiliated groups.

Background

In late 1971, a "Summer Institute Planning Committee of the Development Professional Services Committee, AIR" was formed and charged with "a coordinated effort in regional summer institutes in institutional research." In its final report, submitted in July, 1972, the Committee offered the following recommendation: a program of regional summer institutes on institutional research is feasible, should respond to a significant need in higher education, and should be sponsored by the Association for Institutional Research.

There then follow twenty recommendations for implementation of a summer institute program. No further action occurred until 1976 when the Executive Committee of the Association approved a regional workshop plan developed by Craig Johnson. His plan operationalized the recommendations of the final report of the 1971 Committee referred to above.

The first three summer institutes were offered in the summer of 1977: one in the South, one in the Midwest, and one in the West. The identification of the three institute directors resulted from a survey undertaken by the Association, in which AIR members were asked, among other things, whether they would be willing to serve in that capacity. Each director was then allowed to formulate his own institute approach and, as matters turned out, the three approaches utilized were substantially different. In 1978, two workshops were offered--one in the South and one in the Midwest--by the same individuals who developed those offered in 1977. In considering summer institutes for 1979, the institute subcommittee decided to solicit requests for proposals from AIR members. This approach resulted in submission of three proposals, two of which were accepted and one of which was rejected.

Forum workshops began in 1975 with the offering of a workshop for newcomers to institutional research. Since that time, the number of workshops offered at each annual Forum has continued to grow, with twelve being offered at the 1979 Forum in San Diego and eight being offered in Atlanta at the 1980 Forum.

Workshops have also been offered at AIR regional meetings. They have either taken the form of individuals from within the region offering a workshop or, alternatively, members of the Association from outside the region being invited to offer a workshop of particular interest to the regional membership.

Committee Activities

Experience to date with workshops and institutes led to the identification of a number of major problems and issues requiring resolution. The first major issue relates to the lack of a long-term plan to guide the development of summer institutes. No decisions have been made regarding the specific client groups within the Association whom we seek to serve via institutes, the topics to be developed, or the priorities to be assigned. Second, there is the matter of quality control. The issue has arisen most prominently with regard to the Forum workshops but has also been expressed with regard to particular presentations within the summer institutes. The criticisms have taken several forms, including appropriateness of the material for a workshop, poor quality, weak exercises. What is lacking is established criteria for pre-evaluation of proposed presentations and an independent post-evaluation of what has transpired. Third, insufficient attention has been given to the question of marketing strategy: timing of institutes, locations, potential clienteles, relevancy of topics, formation, length of institute, etc. Only in the first set of summer institutes was there any attempt at independent post-assessment. The remaining issues can all be encompassed within the rubric of one word: money. More specifically, the issues to be addressed are these: (a) what incentives is the Association prepared to offer to individuals to develop and present institutes, (b) what kinds of contractual arrangements is the Association prepared to enter into regarding the development and presentation of institutes, and (c) to what extent is the Association prepared to subsidize the offering of institutes?

As a result of these and other issues, the Executive Committee directed the Workshops Committee to formulate a set of recommendations regarding the future development of Forum workshops, summer institutes, and workshops of regional/affiliated groups. The Committee's report was considered by the Executive Committee of the Association at its meeting in November, 1979. At that meeting, the Workshops Committee was directed to prepare for the next meeting of the Executive Committee "a proposal for an AIR-sponsored institute to be offered some time next year (1980-81); such proposal to provide for developmental cost and to generally adhere to the guidelines contained in the recommendation section (Section 8) of the aforementioned Workshops Committee Report."

In discussion preceding approval of the above motion, there appeared to be general consensus that the Executive Committee would be receptive to a proposal which reflected the broad range of institutional activities and was directed toward the "newcomers" within the Association.

The Workshops Committee prepared a proposal which was then submitted for consideration at the meeting of the Executive Committee in March, 1980.

In discussion, there was unanimous agreement within the Executive Committee that professional development should be a major activity of the Association; that in order to provide a commitment to its ongoing development, a committee, similar to the Publications Board, should be devised. A subcommittee of the Executive Committee was charged with the development of terms of reference and composition of such a body.

With our experiences to date, the review that has taken place during the current year, and the proposals for establishment of a professional development body similar to the Publications Board, it is the belief of the Workshops Committee that the Association now has a firm and realistic foundation upon which to build a comprehensive program of professional development activities for its members.

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH
MEMBERSHIP REPORT
April 24, 1980

Part I. Complete Membership Years (January 1 - December 31), 1975-1979

	1975	1976	1977	1978	1979
Distinguished	4	4	4	4	4
Emeritus	-	-	3	7	10
Regular					
New	341	296	400	438	473
Renewal	782	877	901	1047	1166
Graduate					
New	17	20	25	33	30
Renewal	9	16	21	26	27
Total	1153	1213	1354	1555	1710

Part II. Incomplete Membership Years (January-Forum), 1975-1980

	4/25 1975	4/24 1976	4/30 1977	4/30 1978	4/30 1979	4/24 1980
Distinguished	4	4	4	4	4	4
Emeritus	-	-	3	4	8	13
Regular						
New & reinstated	192	223	271	219	301	307
Renewal	667	765	831	957	1076	1191
Graduate						
New	-	15	19	19	18	26
Renewal	-	16	19	20	24	29
In process	31	-	-	112	67	-
Total	914	1023	1147	1335	1498	1570

Index of Participants in the Forum Program

List of Forum Registrants

Program Participants

Adams, W. Sam
14C, 18F

Ahrens, Stephen W.
6B

Alessio, James M.
17B

Allen, Richard
23E(1)

Anderson, Donald J.
23C

Atelsek, Frank J.
8H(2)

Avakian, A. Nancy
13A

Baker, Michael E.
7H(16), 20C(1)

Balderston, Frederick E.
6F

Barak, Robert J.
14C, 21A

Beatty, George, Jr.
12H, 17B

Beaver, Albert J.
14G

Beck, Nancy
10F

Becklin, Karen M.
14G

Bekus, Albert
7H(23)

Bélanger, Charles H.
13E(1), 20D

Bell, Robert H.
22A/B

Berry, Richard M.
17B

Betten, Neil B.
23G

Bingen, Franz
7H(11)

Blake, Elias, Jr.
19H

Bloomfield, Stefan D.
14A, 20D(1)

Boderman, David C.
23C(1)

Bolte, J. R.
21E(1)

Bordeleau, Jacques
7H(5)

Bounds, Stuart M.
4E

Braskamp, Larry A.
1A, 10A

Braun, Shepard
8H(12)

Braxton, John
8H(5)

Brim, Charles W.
20E

Broad, Molly Corbett
14B, 16E

Broomall, Lawrence W.
21C(1)

Brown, Charles I.
11G

Brown, Kenneth G.
8H(16), 13D(1)

Bruss, Edward A.
8H(11)

Bryson, Charles H.
21E

Budig, Jeanne E.
8H(15)

Calvert, John
14A

Cammack, Elwin F.
14G, 23A/B

Campbell, Joseph E.
13G

Capoor, Madan
7H(9)

Carey, Karen W.
17A

Carpentier, Paul
14A

Carter, Edith H.
17B

Carter, Fletcher F.
17B

Cavalier, D. Anne
21C(1)

Cash, Webster C.
6D

Chapman, David W.
13D(2), 14F

Chase, John S.
13B

Chisholm, Mark
7H(7)

Choquette, Robert
6B

Cliff, Rosemary
7H(6)

Coleman, Daniel R.
7H/8H, 21E(1)

Collier, Douglas J.
7H(28)

Collins, Thomas R.
20A

Cooper, Edward Mark
14D(1)

Cossu, Claude
14A, 20F

Cowden, Edward S.
7H(16)

Cox, Robert
21D(1)

Craven, Eugene C.
14G

Dahl, Randall W.
8H(27)

Davis, Sandy
20E(1)

Dearman, Nancy B.
6D(2)

Delmont, Timothy J.
17E(1)

Deniozos, Demetris
7H(21)

Desrosiers, Edward
20F

DeVries, David J.
17A

Dickey, Ann K.
17D(1)

Didham, James R.
8H(19)

Duckwall, Julia M.
13B

Duggan, Aidan
6B, 17C(1)

Dukes, Fred
17D(2)

Dumont, Richard G.
7H(23), 8H(4)

Elfner, Eliot S.
8H(24)

Elton, Charles F.
13C(1)

Embry, Lowell R.
8H(16)

Endo, Jean E.
7H(1)

Engler, Sheldon D.
6D(1)

Ezell, Joe B.
5H, 16C

Feagler, Virginia
13E(2)

Fenske, Robert H.
19H

Fenstemacner, William P.
20C

Fincher, Cameron L.
14E

Firnberg, James W.
6D(1)

Fitzgerald, Ronald T.
21D

Frances, Carol
20A

Gaither, Gerald H.
21F

Gale, K. Stanley
21D(2)

Gardner, Don E.
7H(29)

Geiger, Joseph J.
13E(2)

Ghoddousi, Shahriar
8H(14)

Gignilliat, Arthur M.
22A/B

Gilmour, Joseph E.
21A

Girard, Guy
7H(5)

Glenny, Lyman A.
6G

Goldberg, David
17D(1)

Golladay, Mary A.
6D(2)

Gomberg, Irene L.
8H(2)

Gravely, Archer
17C(2)

Greenhill, Craig J.
7H(4), 8H(12)

Greer, Linda R.
8H(3)

Grose, Robert F.
4B, 17A

Grüger, Anneliese Monika
8H(28), 20D

Gunnell, James B.
11G

Habben, Dorothy E.
8H(18)

Hahn, Robert
1F

Halstead, D. Kent
6G

Harpel, Richard L.
7H(1)

Hengstler, Dennis D.
8H(29)

Hickey, Anthony Andrew
8H(23)

Hickey, Jo Ann
8H(23)

Hillman, Barbara J.
23E

Hillman, Eric A.
2B, 11B

Hinman, Martha M.
13G

Hoenes, Nellie
22A/B

Holmes, Jeffrey
20A

Howard, Richard D.
13B, 16A

Howsmon, Wilfred
13G

Hunter, Larry O.
6C

Hutcheson, Sigrid
14F

Hyatt, James A.
14B

Ihlanfeldt, William
21F

Ireland, John M.
7H(14)

Ivery, Marsha K.
23C(1)

Jackson, Carla
7H(23)

Jackson, Peter
21F

Jacobs, Frederic
1F

Jedamus, Paul
14D

Johnson, F. Craig
5H, 12H(2), 15H

Johnson, Mark D.
17C

Johnson, Russell H.
13D(2)

Jones, Dennis P.
21C

Jones, Larry G.
21D

Karman, Thomas A.
6A

Kaufman, Norman
8H(7)

Kehoe, John J.
8H(22)

Khan, Anwar
8H(15)

Kinnick, Mary K.
7H(24)

Kissler, Gerald R.
13D

Krauth, Barbara
8H(7)

Kuhn, L. Robert, Jr.
6D(1)

Kuhns, Eileen
6E(1), 21G

Kunkel, Paul E.
17D

Kutina, Kenneth L.
8H(11)

Larsen, Suzanne W.
4G, 13E, 18F

Lasher, William F.
18F, 20G, 23C(1)

Laughlin, J. Stanley
6C

Lavalee, Lise
13E(1)

Lawless, Robert W.
17F

Lay, Robert S.
7H(18)

Lenning, Oscar T.
13D, 14F

Leslie, Larry L.
23C(2)

Lewis, Robert I., II
21B

Little, Doug
7H(7)

Littrell, Robert T.
10B

Lott, Gary B.
21A

Lumsden, Ernest A.
7H(25)

Lunney, Gerald H.
11C, 17A

Lyons, John Michael
17E

Maguire, John
7H(18)

Mahan, Beatrice T.
8H(21), 17C(2)

Mahoney, Heidi L.
20C(2)

Makowski, David J.
13C(2)

Manahan, Richard A.
17B

Mann, Richard L.
23E(2)

Martin, Randel O.
13C(1)

Martorana, S. V.
6E(1)

Matthews, B. C. (Burt)
20A

Maxey, E. James
10C, 21F

McCoy, Marilyn
6G, 20F

McDaniel, Walter A.
8H(20)

McGovern, James J.
1B

McIntosh, Naomi E.
20D(2)

McLaughlin, Gerald W.
8H(21), 17C(2), 20G

McMullen, Tom
23F

Mears, G. L.
10G

Meganathan, Ami
7H(19)

Mehallis, Mantha Vlahos
6E(2)

Melchiori, Gerlinda S.
14C(1)

Meredith, Mark
11A

Mertins, Paul
16E, 14B, 10D

Miller, Robert L.
7H(25)

Mims, R. Sue
6A, 13B

Minnick, Kirk F.
7H(22)

Moden, Gary L.
14F

Montgomery, James R.
8H(21), 14D, 17C(2)

Morgan, David M.
22A/B

Muffo, John A.
4A, 8H(13)

Muston, Ray A.
10C, 13A

Nangle, John E.
8H(6)

Naples, Caesar J.
23G

Naugher, Jimmie R.
13G

Naylor, Paul D.
8H(30)

Newlon, Lorraine
17D(2)

Norris, Donald M.
13E, 17F

North, Robert D.
14B

Olivier, Philippe
10C

Orahood, Mary Alyce
10G

Orahood, John A.
10G

Padgett, David W.
8H(16)

Palmer, Thomas J.
7H(13), 7H(14), 8H(14)

Park, Eldon
10F

Parker, John D.
14E

Pascarella, Ernest T.
8H(1)

Paulson, George
16E

Perry, Richard R.
6E

Peters, Milton E.
8H(19)

Petersen, Richard J.
21C(2)

Peterson, Marvin W.
6F, 20G

Peterson, Richard E.
10F

Phillips, William B.
20B

Plunkett, Lamar R.
22A/B

Pomrenke, Velma
1E, 10E

Potter, Arthur G.
6B

Potts, Edwin J.
10F

Poulton, Nick L.
6A

Pratt, Linda K.
20E(1)

Reap, Margaret C.
7H(12)

Reichard, Donald J.
7H(25), 8H(29)

Rice, Gary A.
4C, 11D

Ridge, John Wm.
8H(18), 21E

Rivers, Prince
21B

Rossmeier, Joseph G.
13G, 20G

Rusk, James J.
23C(2)

Russell, C. Neil
6C(2)

Ryland, Jane N.
14B

Salley, Charles D.
17D, 23C

Sanford, Timothy R.
7H(20), 8H(30)

Saterfiel, Thomas H.
11F

Sauer, Ken
10D

Saupe, Joe L.
10D, 20G, 23A/B

Scipione, Paul
8H(20)

Schmidtlein, Frank A.
13C

Schwartz, Virginia Higgins
14E(2)

Sewell, Ann Clinton
2A

Shatto, Gloria
13F

Shoemaker, Daniel P.
7H(13), 7H(14), 8H(14)

Siau, Carlos
7H(11)

Simpson, William A.
7H(13)

Smart, John C.
13C(1), 21G

Smith, Edwin R.
14A, 20B

Smith, J. Stephen
11E

Smock, H. Richard
1A, 10A

Speckeen, Frederick J.
6B

St. John, Edward P.
21B

Staman, E. Michael
7H(2), 8H(25)

Stanley, Marcia A.
17A

Stark, Joan S.
14F, 17G, 21G

Starkey, Robert W.
20E

Staskey, Paul J.
20B, 21C

Stevenson, Mike
7H(15)

Stewart, Clifford T.
6E, 8H(18)

Stewart, Jewel H.
21B

Storrer, Sandra J.
7H(8)

Strenglein, Denise
7H(18), 16A, 20A, 23F

Strickland, Deborah C.
8H(21)

Sturtz, Alan J.
16B

Suttles, William M.
5H

Sutton, Joseph T.
23A/B

Swanson, John R.
17D(2)

Taylor, Alton L.
13B

Teeter, Deborah J.
23E(2)

Teitelbaum, Herta
7H(22)

Templeton, A. B.
20B

Terenzini, Patrick T.
8H(1), 17G

Terrass, Stuart M.
1E, 10E, 4A

Tetlow, William L.
16D

Thomas, Charles R.
16A

Thomas, Glenn G.
13F

Thompson, Hugh L.
17E(2)

Thrasher, Gerald R., Jr.
7H(10), 8H(10)

Timm, Neil H.
7H(26)

Toombs, William
8H(5), 13A, 17G

Toporovsky, R. M.
1G

Topping, James R.
23E(1)

Torrence, Lois E.
13B, 17G, 20C

Troelstrup, Richard L.
8H(4)

Tully, G. Emerson
10C

Turrisi, Ilona
23G

Uehling, Barbara S.
5H

Uhl, Norman P.
13F 17E, 20E(1)

Updegr[illegible] Daniel A.
[illegible]

Ussery, Robert M.
4E

Valiga, Michael J.
7H(3), 10C

Viehland, Dennis
8H(7)

Vinberg, Anders
23[illegible]

Walker, Donald E.
6F

Walleri, R. Dan
7H(15)

Wallhaus, Robert A.
13A, 21G, 23A/B

Warrack, Barry J.
6C(2)

Warwar, Zuhair
14A

Weathersby, George
20F

Weber, Margaret B.
20E(2)

Weiss, Janis H.
7H(30)

Westen, Risdon J.
20B

Wilson, Richard F.
1A, 10A

Winter, Robert
13C

Witmer, David R.
6D

Wong, S. Godwin
17C

Woodley, Alan
20D(2)

Wright, Douglas J.
17F

Wulfsberg, Rolf M.
13C(2), 16E, 21C(2)

Zeeman, E. C.
12H(1)

Zellner, Lou
14G

Registrants

Abel, Robert L.
Adams, W. Sam
Adelman, Stanley I.
Ahrens, Stephen W.
Akers, Charlotte Jane
Alessio, James M.
Allen, Maxine B.
Allen, Richard
Allen, Thomas C.
Allender, Rose
Anderson, Don J.
Anderson, John I.
Andrechak, Michael J.
Andrews, Robert
Arden, Eugene
Asher, E. Jack
Avakian, A. Nancy
Bacigal, Stephen
Baker, John, Jr.
Baker, Michael E.
Bakshis, Robert D.
Balachandran, Sundaresan
Balderston, Frederick E.
Baldwin, Roger G.
Baldwin, Samuel
Ballou, Leonard R.
Balsley, Richard D.
Barak, Robert J.
Bare, Alan C.
Barnard, Richard H.
Barnes, Glenn
Barone, Carole A.
Barron-Mee, Junith
Barton, J. D., Jr.
Baskin, Yvonne
Bassett, Caroline L.
Batson, Steve W.
Baudin, Jerry J.
Beattie, Charles M.
Beatty, George, Jr.
Beaver, Albert
Beaver, Don
Beck, Nancy
Becklin, Karen
Belanger, Charles H.
Bell, Marcus V.
Bell, Robert H.
Bell, Wallace E.
Benet, Helen C.
Bennett, Alan L.
Bennett, W. Earl
Bentley, Susan
Berg, David J.
Berry, Richard M.
Best, Harold L.
Bestman, Lawrence S.
Betten, Neil B.
Bettencourt, Harold O.
Beville, Judith A.
Beyen, Eduard
Bilek, Mary Kim
Bingen, Franz
Bisbey, Gerald D.
Bishop, C. W. F.
Blair, Norman A.
Blake, Elias, Jr.
Blamick, Wesley E.
Blom, Douglas I.
Bloom, Allan M.
Bloomfield, Stefan D.
Boberg, Alice L.
Bohannon, Tom
Bolden, Georgianna D.
Bollman, Sue W.
Bolte, John R.
Bordeleau, Jacques
Bounds, Stuart M.
Bourdon, James P.
Boville, Sue
Bowen, J. Thomas
Brannen, Catherine J.
Branscum, Joanne
Braskamp, Larry A.
Breen, Edward F.
Bright, Harold F
Brim, Charles W.
Broad, Molly Corbett
Brodigan, David L.
Brooks, Charles A., Jr.
Brooks, Doris B.
Broomall, Larry
Bross, James B.
Brown, Cecilia McDaniel
Brown, Charles I.
Brown, Furney E.
Brown, Kenneth G.
Brown, Marilyn K.
Brown, Stephanie Laforest
Bruss, Edward A.
Bryant, Brenda L.
Bryson, Charles H.
Buckley, E. F.
Budig, Jeanne F.
Buford, Delores
Bulger, William W.
Burl, Tom V.
Burns, James A.
Bush, Marie A.
Butler, Dennis G.
Butner, Nancy W.
Butts, Stephen J.
Cairns, Bill
Calvert, John R.
Cammack, Elwin F.
Campbell, Jill F.
Campbell, Joseph E.
Campbell, Leland H.
Canada, Richard M.
Capoor, Madan
Carey, Karen W.
Carey, Robert D.
Carlson, Don
Carney, Paul
Carpentier, Paul
Carter, Edith H.
Carter, Fletcher F.
Carter, Lamore J.
Cash, Webster C.
Cavalier, D. Anne
Champ, Gary L.
Chaney, John F.
Chapman, David
Chapman, Shirley H.
Chase, John S.
Chaston, Larry D.
Chatelain, Wymer C., Jr.
Cheek, Wanda K.
Chisholm, Mark
Choquette, Robert
Christal, Melodie E.
Clark, Frank C.
Clark, James R.
Clements, David G.
Cliff, Rosemary
Coburn, Kari C.
Cohen, Margaret K.
Coleman, D. R.
Collier, Douglas J.
Collins, Thomas R.
Collmer, Russell C.
Cooke, Richard H.
Cooper, Edward
Corbitt, Gail
Corcoran, Mary
Cosgriff, Stephan J.
Cossu, Claude
Cottonham, Verna H.
Couch, Don
Cousineau, John G.
Cowan, Ozell
Cowgill, Dale S.
Cox, Barbara C.
Craven, Eugene C.
Cribbs, Jeffrey S.
Crosby, Lonnie
Curran, Fred A.
Curran, Kathleen
Currie, J. E.
Czuba, Chris Gabrielsen
Dahl, Randall W.
Darling, A. L.
Davidson, Philip R.
Davis, Debra Ann
Davis, Melvin
de Rooij, Peter G. M.
Dean, Robert L.
Dearman, Nancy B.
Delaney, Edward L.
Delmont, Timothy J.
Delucia, Lenore A.
Denham, Caroline V.
Desrosiers, Edward
Desy, Jacques
Devries, David J.
Dey, Kay A.
Diaz, Justo A.
Dickey, Ann K.
Didham, Edieann Biesbrock
Didham, James R.
Dillard, Neil
Doernback, Ronald E.
Donnelly, Sharon
Drake, Roy
Druesne, Barry
Dube, C. Stuart, II
Duckwall, Julia
Duff, Franklin L.
Dugan, Aidan
Duke, Wayne
Dukes, Fred
Dumont, Richard G.
Edamatsu, Phyllis
Edwards, Crystal D.
Edwards, David A.
Elfner, Eliot S.
Eller, Joyce E.
Ellsworth, Jill H.
Elton, Charles F.
Elwell, Albert R.
Embry, Lowell R., Jr.
Endo, Jean
England, Martin
Engler, Sheldon
Espey, David M.
Esposito, Tony
Estrano, Alfredo Jose
Ethier, Elizabeth
Evans, June
Ezell, Joe B.
Fane, Sister Eileen
Fassio, Nancy L.
Faulk, Harding, Jr.
Fawcett, Greg
Feagler, Virginia M.
Felder, Nathaniel
Fendley, William, Jr.
Fennell, Lee C.
Fenske, Robert H.
Fenstemacher, William P.
Ferguson, Larry W.
Feuvrier, Pierre
Fife, Jonathan D.
Fightmaster, Walter J.
Fincher, A. Lawrence
Fincher, Cameron L.
Fingal, William A.
Firnberg, James W.
Fishburne, Anne M.
Fitzgerald, Ronald Thomas
Folk, Richard A.
Fonger, Ronald R.
Foord, Barry R.
Fordyce, Hugh R.
Forrester, Glen C.
Foster, Randolf
Fox, Elizabeth F.
Fralick, Richard
Frances, Carol
Fredrickson, Philip A.
Freeman, Jack E.
Freeman, Nancy
Friedman, Stuart M.
Frigault, Marc B.
Froehlich, Gustav J.
Gaither, Gerald
Galant, Richard L.
Gale, Stan
Gamby, Raymond R.
Gardner, Don E.
Garrett, Bill
Garrity, Ann
Gaston, Eugene
Gates, Larry C.
Gauger, William H.
Gavin, Donald P.
Gaylord, Thomas A.
Geiger, Joseph J.
Gignilliat, Arthur M.

Gilbert, Charles C.
Gilmour, Joseph E., Jr
Girard, Guy
Girves, Jean E.
Gleason, William
Glenny, Lyman A.
Golladay, Mary A.
Gomberg, Irene L.
Goncalves, Humberto F.
Gorrell, W. T.
Gose, Frank J.
Gould, Loren
Graff, Gary W.
Graham, Billie Gayle
Graybeal, William S.
Green, Tomie T.
Greenhill, Craig J.
Greenwood, Al
Greer, Linda R.
Gregory, John
Gregory, Judi A.
Gresham, L. Paul
Greve, Donald W.
Griffitts, Horace
Grose, Robert F.
Grosset, Jane
Grostic, John D.
Groszos, Stephen J.
Gruenewald, Mary Gardiner
Gruger, Anneliese Monika
Gulko, Warren W.
Gunnell, James B.
Habben, Dorothy E.
Hagan, Willie J.
Hahn, Robert
Hale, Earl
Hale, Leslie
Halstead, Kent
Hamberg, Ronald
Hammer, Petra
Hample, Stephen R.
Hand, R. J.
Harden, Warren R.
Hardy, Nellie T.
Harpel, Richard L.
Harrington, Charles F.
Harris, Adrian H.
Harrison, Jim
Harriss, Donald K.
Hastings, Janice L.
Hasz, Mary Kay
Haupt, Lynn B.
Hayes, Annie R.
Hecker, Donald
Hedden, Mike O.
Heetderks, John A.
Heim, Peggy
Heineman, Paul
Henard, Ralph E.
Henderson, James A., Jr.
Hengstler, Dennis
Henson, Charles J.
Hernandez, Mary Lynn
Heydinger, Richard B.
Hickey, Anthony Andrew
Hickey, Jo Ann
Hickson, Joyce
Higley, H. Bruce
Hillman, Barbara
Hillman, Eric A.
Hinman, Martha
Hocutt, Gerald D.
Hodge, R. David
Hoenes, Nellie
Hogan, Gail
Hogg, Richard A.
Holdaway, Edward
Holderfield, H. McLean
Holmes, Barbara D.
Holmes, Jeffrey
Honsberger, Dean K.
Hopkins, Thomas A.
Horwitz, Anita Werbin
Houwing, J. F.
Howard, Richard D.
Howell, James O.
Howsmon, Wilfred B., Jr.
Hubers, Maarten M.
Hudson, Richard
Huisken, Jon
Hunt, W. Kevin
Hunter, Larry O.
Hussain, K. M.
Hutcheson, Sigrid M.
Hyatt, James A.
Ihlanfeldt, William
Innis, C. Thomas
Isbister, A. G.
Ivey, Elizabeth D.
Jackson, Carla
Jackson, Peter
Jackson, Ruby M.
Jacobs, Frederic
Jacobs, Richard W.
Jacobs, Walter R., Jr.
James, John A.
Jamieson, D. M.
Jedamus, Paul
Jenny, Hans H.
Jensen, Harald E.
Jessup, Marie
Johnson, F. Craig
Johnson, Jack K.
Johnson, Mark D.
Johnson, Russell H.
Johnson, W. Clarke, III
Jones, B. J.
Jones, Dennis P.
Jones, Gordon
Jones, Hilda
Jones, Jack
Jones, John
Jones, Karen C.
Jones, Larry G.
Jones, Linda
Jones, Maurine
Joseph, Diana
Jung, Loren B.
Kalb, John
Kallio, Ruth E.
Kaluzniacky, Eugene
Kane, H. E.
Karman, Thomas A.
Kaufman, Barry
Kayla, Carol
Keating, Jean C.
Kenoe, John J.
Kenney, James B.
Kerlee, Donald D.
Kerr, James L.
Khan, Anwar
King, Francis P.
Kinkade, Lester D.
Kirchoff, Charlene
Kissel, Mary Ann
Kissler, Gerald R.
Kleinfelter, Lawrence L.
Kleyle, James F.
Knapp, Elizabeth A.
Knight, Jim D.
Knorr, Owen A.
Ko, Vivien
Kojaku, Lawrence K.
Kozma, Robert B.
Krauth, Barbara
Kristjanson, A. M.
Kroner, Josh
Kuehn, George
Kuhn, L. Robert
Kuhns, Eileen
Kulage, Karyn A.
Kunkel, Paul E.
Kurtz, Eric
Kutina, Kenneth L.
Lall, Sarla
Lamb, James M.
Lance, Gary L.
Langston, Ira W., IV
Lappin, A. E.
Larsen, Suzanne W.
Lasell, Mel
Lasher, William F.
Laughlin, J. Stanley
Lauzon, Marcel
Lavalle, Lise
Lawless, Robert W.
Lawton, Robert E.
Lay, Robert
Leahey, Pierre
Lee, Donald E.
Lee, Marilyn E.
Lee, Nancy M.
Lee, Ronald A.
Lendenmann, Werner
Lenning, Oscar T.
Lester, Sister Jeanette A.
Lewis, Alex O.
Lewis, George C.
Lewis, Jack M.
Lewis, Robert I., II
Lewiski, Raymond L.
Linhart, Cynthia A.
Linnell, Naomi
Litaker, R. Gregory
Little, Philip L.
Little, W. D.
Littrell, Robert T.
Liu, Richard
Lobban, Raymond K.
Lockyer, Lois H.
Loeb, Jane W.
Lorang, Wendell G.
Losak, John
Lott, Gary B.
Lowther, Malcolm A.
Lozier, G. Gregory
Lucas, John A.
Lueck, Lowell A.
Luna, Cynthia L.
Lunceford, Bill E.
Lunney, Gerald H.
Lusain, William E.
Lyons, J. Doyle
Lyons, John M.
Lyons, Linda
MacDermaid, Darryl
MacKinnon, Anne Marie
Mahan, Beatrice
Mahoney, Heidi L.
Makowski, David
Maltby, E. Suzanne
Manahan, Richard A.
Mangelson, Wayne L.
Mann, William
March, William
Marlowe, Lon D.
Maroofi Bozorgi, Parvin
Marshall, Alex M.
Marshall, Robert L.
Martin, James S
Martin, Mary P.
Martin, Randel O.
Martorana, S. V.
Mason, Thomas R.
Mason, Vicki
Mathews, B. C.
Mathewson, Douglas A.
Matthews, Jana B.
Maxey, James
McAllister, Harmon C.
McAlpine, Thomas J.
McCain, Thomas C.
McCandless, Rick
McCollester, Charles W.
McCord, Michael T.
McCoy, Marilyn
McDaniel, Walter A.
McGeein, Robert J.
McGovern, James J.
McHenry, Charlotte Swales
McIntosh, Naomi E.
McIntosh, William A.
McKee, Richard C.
McKinley, William E., Jr.
McKita, Carleton P.
McKown, Johnette
McLaughlin, Gerald W.
McLemore, Charles
McMullen, Tom
McMurtry-Reed, L. E.
Mears, G. L.
Meeker, Ralph D.
Meganathan, Ami
Melchiori, Gerlinda S.
Mellon, Robert
Meredith, Mark
Mertins, Paul F.
Metcalf, Lynn W.

Registrants

Miller, Annie Mai
Miller, Carol M.
Miller, James L., Jr.
Mills, Earl S.
Milner, James A.
Mims, R. Sue
Mingle, James R.
Miyataki, Glenn K.
Moden, Gary O.
Mogilensky, Emma
Montgomery, James R.
Moore, Carl V.
Moore, Margaret L.
Moreland, Deborah S.
Morgan, David M.
Morishita, Elmer
Morrison, James L.
Morse, P. Kenneth
Morse, Suzanne W.
Mortenson, Thomas G.
Moxley, Linda S.
Muffo, John A.
Murdock, James L.
Murphy, Maureen
Muston, Ray A.
Myers, Michael M.
Namminga, Sam
Nangle, John E.
Naples, Caesar J.
Nartonis, David K.
Naugher, Jimmie R.
Naylor, Paul D.
Neufeld, Robert W.
Neville, Nancy
Newlon, Lorraine
Newton, McKinley
Nichols, Jim
Nichols, W. Eugene
Noe, Nicholas N.
Noriega, Penny Proctor
Norris, Donald
Norris, Richard D.
Norstedt, Daniel
North, Robert D.
Oerter, Jean
Olivier, Philippe
Orahood, John P., Jr.
Orahood, Mary Alyce
Orten, Catherine G.
Ossman, George W.
Overstreet, J. Douglas
Overvaag, Harald
Oxford, Lake C.
Oyler, Gary M.
Pallett, William H.
Palmer, Thomas J.
Parizeau, Claude
Park, Eldon
Parker, John D.
Paulson, George
Perkins, Mark L.
Perry, Richard R.
Peters, Milton E.
Peterson, Marvin W.
Peterson, Richard E.
Petolas, Jean-Pierre
Phillips, William B.

Pierce, George A.
Pinard, Claire
Pindle, Arthur J., Jr.
Plenge, Peter
Plummer, James
Plunkett, Lamar R.
Pomrenke, Velma
Potter, Arthur G., III
Potts, Edwin J.
Poulton, Nick L.
Pounds, Haskin
Powell, Randall R.
Pracht, William E.
Prater, Barbara
Pratt, Linda K.
Prielipp, Elizabeth
Printup, Roger
Pritchett, Merrill R.
Prull, Richard W.
Purcell, Terry
Quero-Munoz, Lila J.
Rainey, Bessye C.
Rajasekhara, K.
Randolph, Suzanne M.
Reap, Margaret C.
Redmon, Thomas
Reichard, Donald J.
Reid, John Y.
Reid, Susan H.
Retzer, Marcia J.
Reynard, David
Rice, Gary
Rich, Stuart L.
Ridge, John William
Rigdon, Joyce
Riley, Janet
Rivers, Prince
Roark, William F.
Robillard, Michel
Robinson, Gordon W.
Rogers, Fred
Rogers, Stephen C.
Rollins, Ken
Rose, Richard
Rossmeier, Joseph G.
Royston, Earnestine
Rudan, John W.
Rugg, Ed
Rusk, James J.
Russell, C. Neil
Ryland, Jane M.
Saint-Pierre, Jacques
Salley, Charles D.
Sanders, Chip
Sanford, E. Paulette
Sanford, Timothy R.
Saterfiel, Thomas H.
Sathre, Colleen O'Brien
Saunders, Laura
Saupe, Joe L.
Sauer, Ken
Sayers, Sandra
Schaub, Regina
Schietinger, E. F.
Schmidt, Siegfried H.
Schmidtlein, Frank A.
Schofield, John

Schomberg, Steven F.
Schuette, R. Wade
Schulte, Bill H.
Schwartz, Gerry
Schwartz, Virginia Higgins
Scipione, Paul A.
Scott, Gloria
Seelbinder, Ben M.
Seeley, John A.
Semke, Charles W.
Sewell, Ann Clinton
Shamburger, Miller L.
Shatto, Gloria
Shaw, Colin S.
Sheeder, Richard D.
Sheehan, Bernard S.
Sheldon, Philip B.
Shoemaker, Daniel
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